WPS5569

Policy Research Working Paper 5569

Sudden Stops

Are Global and Local Investors Alike?

César Calderón
Megumi Kubota

The World Bank
Latin America and the Caribbean Region.
Office of the Chief Economist
February 2011

Policy Research Working Paper 5569

Abstract

The main goal of this paper is to characterize the determinants of sudden stops caused by domestic vis-à-vis foreign residents. Are the decisions of domestic investors to invest abroad or of foreign investors to cut off funds from the domestic economy governed by the same set of determinants? Given the distribution of different types of sudden stop episodes over time and its different macroeconomic consequences, the authors argue that the determinants may not be alike. Using an effective sample of 82 countries with annual information over the period 1970–2007, the analysis finds that global investors are less likely to stop bringing their capital when their economy is growing and the world interest rate is lower. Domestic agents are more willing to invest abroad if the macroeconomic performance of the domestic economy is poor (high inflation), the financial system is weak, and there are high external savings (current account surpluses). Increasing financial openness makes the domestic country more vulnerable to sudden stops caused by either local or global investors. Finally, countries with higher shares of foreign direct investment are less prone to inflow-driven sudden stops, whereas the opposite holds for outflow-driven sudden stops.

This paper is a product of the Office of the Chief Economist, Latin America and the Caribbean Region. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at ccalderon@worldbank.org.

Sudden Stops: Are Global and Local Investors Alike?[*a]

César Calderón, Megumi Kubota

[a] *The World Bank, 1818 H Street NW, Washington DC 20433, USA*

JEL Classification: F32, F41

Key Words: Sudden Stop, Gross Capital Flows, Reversals

[*]Calderón: The World Bank, Office of the Chief Economist, Latin American Region. E-mail: ccalderon@worldbank.org. Kubota was a consultant for the Office of the Chief Economist in the Latin America and the Caribbean region during the preparation of this paper. We are grateful to Augusto de la Torre and Eduardo Cavallo as well as participants at the 2010 INFINITI Conference in Dublin, Ireland (Trinity College) for their comments and suggestions. The views expressed in this paper are those of the authors, and do not necessarily reflect those of the World Bank or its Boards of Directors.

1. Introduction

The paths of development, growth and crisis among developing countries have been tightly related to patterns of abundance and scarcity in foreign financing. Sudden stops in capital flows tend to trigger or occur around crisis episodes and were more likely to happen in the 1990s than in the 1980s (see Cavallo and Frankel, 2008), with deleterious effects on economic performance (Becker and Mauro, 2006; Cerra and Saxena, 2009). This phenomenon of sudden stops in capital flows, however, can be driven by the behavior of either global or local investors. When driven by a sharp decline in gross inflows, sudden stop episodes may render the domestic economy vulnerable to the decisions of foreign investors. In contrast, when sudden stops are largely attributed to sharp increases in gross outflows, they are not necessarily consistent with the view that the domestic country is being cut off from international financial markets. These episodes may be related to local investors switching to larger positions in foreign securities. If so, then this distinction may play a crucial role in assessing the effects of sudden stops on economic performance and their policy implications. Therefore, it is crucial for policymakers to identify the relative importance of the shocks underlying sudden stops. If a certain type of sudden stop is mainly attributed to declining gross inflows by foreigners, the central policy implication is to reduce the vulnerability of the domestic economy to external financial shocks (*i.e.* country insurance). The policy recommendation would be different if the reversal in net flows is driven by gross outflows of local residents which, in turn, are usually triggered by policy mismanagement (or better risk-taking opportunities abroad).

The empirical literature has typically identified sudden stops as episodes where *net* reversals of capital flows take place (Calvo et al. 2004). However, as we argued above, the observed decline in the financial account could be driven by decisions of either foreign investors (where foreign capital ceases to flow into the domestic economy) or local investors (where there are sudden increases in investors' international investments). Indeed, a non-trivial number of sudden stop episodes do not appear to be driven by the interruption of flows to the domestic economy from global investors, but arise due to sharp increases in gross capital outflows (Rothenberg and Warnock, 2006; Cowan, De Gregorio, Micco and Neilson, 2008).[1] If a decline in financial account is explained by rising gross outflows (rather than a decrease in gross inflows), we are unable to characterize the domestic country as being cut off from the international financial markets. In this context, Cowan and De Gregorio (2005) and Faucette, Rothenberg and Warnock (2005) argued that the sudden-stop behavior observed in Chile during the period 1998-99 was mainly driven by a large increase in the position of Chilean residents in foreign equities, bonds and foreign bank deposits. Chile was not cut off from international markets, but it was affected by a sudden desire of local residents to accumulate and diversify their portfolios in foreign assets.

Although net capital flows are an important concept, we currently live in a world of substantial "*two-way*" gross capital flows (Lane and Milesi-Ferretti, 2007). The concept of gross inflows by foreigners and gross outflows by domestic residents is essential in advanced countries.

[1] Frankel and Schmukler (1996) find that local investors rather than foreign ones are the first to flee the countries in the run up to the 1994-95 Mexican sudden stop.

Moreover, this concept has become increasingly significant in emerging markets due to reserve accumulation and current account surpluses.[2] Focusing our analysis solely on net capital flows may neglect significant nuances of the data on gross flows, thus leading to misinterpretations of the empirical evidence. Therefore, the data on gross capital flows will enable us to distinguish between episodes in which foreign investors cut the access of emerging markets to international markets vis-à-vis those episodes in which domestic residents pull their funds out of the country.

The numerous phases of euphoria and drought in external financing for developing countries have led to polarizing views on the benefits of capital flows.[3] One strand of the literature argues that capital flows may propel economic growth and development through different channels: (a) a wider access to foreign capital may lift credit constraints and allow firms to undertake more productive and riskier investments (Acemoglu and Zilibotti, 1997), (b) direct investment inflows may not only facilitate the diffusion of technology and managerial know-how but also improve the skill composition of labor (Grossman and Helpman, 1991; Borenztein *et al.* 1998; Haskell *et al.* 2007), (c) higher international financial integration may raise the depth and the scope of domestic financial markets by lowering rents and improving the quality and increasing availability of financial services (Chinn and Ito, 2006; Calderon and Kubota, 2009), and (d) the free flow of foreign capital may have a "discipline effect" on macroeconomic policy –although the evidence is robust for monetary policy rather than fiscal policy (Tytell and Wei, 2005; Rogoff, 2007; Kose, Prasad, Rogoff and Wei, 2009b). Others argue that the inherent volatility of these flows brings instability and uncertainty. In particular, business cycles might become amplified, relative prices might get distorted, and crises might be more frequent. All these effects could have an adverse impact on long-run income levels. Rising financial openness appear to elevate the frequency and the severity of currency and banking crisis (Kaminsky and Reinhart, 1999). Finally, the pro-cyclicality of capital flows has a perverse effect on macroeconomic stability. Consumption and government expenditure grow excessively during periods of capital flow bonanza and they tend to adjust drastically when foreign capital stops coming into the domestic economy. This lack of access to world capital markets during bad times may hamper the ability of governments to conduct counter-cyclical fiscal policies (Kaminsky, Reinhart and Vegh, 2005; Reinhart and Reinhart, 2008).

Capital flows pose serious challenges for policymakers. For instance, in ***bad times***, when countries face disruptions in international capital markets (as those experienced in the late 1990s), the scope and effectiveness of monetary policy usually become seriously contested. The key policy question would be how countries ensure the flow of international credit to finance trade. How does the private sector finance its investment? How does it guarantee that ongoing

[2] Lane and Milesi-Ferretti (2007) document that emerging market economies have been accumulating large stocks of US treasury bills going into official reserve assets and have been receiving large inflows of FDI and portfolio equity, as well as private bond market inflows.

[3] Kose, Prasad, Rogoff and Wei (2009a) argue that the benefits of financial globalization can be better understood by their indirect effects on important growth drivers. For instance, local capital markets are deeper in financially integrated economies (Klein and Olivei, 2008). Public and corporate governance also improve in countries with higher financial openness (Stultz, 2005).

infrastructure projects remain on track? Alternatively, in *good times*, when foreign capital flows into the domestic economy, policymakers typically ask what type of policies are effective to manage this surge of capital inflows. How can countries limit the real appreciation of the domestic currency to avoid a loss in competitiveness? How can countries tailor the structure of capital flows that they receive to their development needs? Should they strengthen their institutional and financial infrastructure? As a result, the effects of capital flows on policy-making are large both in good times and in bad times.[4]

The main goal of this paper is to re-examine the determinants of sudden stops by distinguishing the different sources of the decline in the financial account of the balance of payments. We evaluate whether the determinants of sudden stops may differ by type —that is, whether the same set of forcing variables have different impact on the drop in the financial account when driven by a reduction in inflows from foreign investors or when driven by a larger outflow by domestic residents. We first argue that the decision of foreign investors may be different from that of domestic ones because of information asymmetries. For instance, foreign investors may have informational disadvantages relative to domestic investors regarding the investment climate of the domestic economy, differences in regulatory frameworks, intricate tax systems, and differences in the efficiency of the judiciary system, among others. The differences in the decision making process of foreign vis-à-vis domestic investors can also be attributed to the differences in reading and evaluating information –which, in turn, is determined by the costs of processing information on the domestic economy. However, we should recognize that with all the advances in information and communication technology (ICT), those differences are narrowing. Finally, foreign investors may be more sensitive than local investors to "*push factors*" of capital flows into the domestic economy. For instance, global investors are more prone to invest their capital in the domestic economy if the returns in their economies (say, the interest rate in the foreign country) are lower. If local investors may still invest in the foreign country despite the lower world interest rate, considerations on foreign assets as safe assets (say, US T-bills) may prevail. This paper also presents some empirical evidence on the different time-bunching of sudden stops by source (Figure 4) and the differences in their macroeconomic consequences (Figure 5 and Table 6). These findings may indicate differences in the determinants of sudden stops driven by foreign investors (*inflow-driven*) vis-à-vis those driven by decisions of local investors (*outflow-driven*). If that is the case, preventive policies implemented by governments will also differ.

In order to analyze the questions in this paper we gather information on gross capital flows for 185 countries from 1970 to 2007. Then our *effective sample* is reduced to 82 countries while eliminating small countries (*i.e.* with population less than 1 million in 2007 and gross national income per capita lower than US$ 2000) and countries with few observations (*i.e.* less than 9 consecutive annual observations). We follow the procedure outlined in Guidotti, Sturzenegger and Villar (2004) to define a sudden stop as the reduction in the financial account that is at least one standard deviation below the mean and exceed 5 percent of GDP. To ascertain whether the

[4] Kose, Elekdag and Cardarelli (2009) have recently documented the policy responses to surges in private capital inflows across a wide array of developing and industrial countries.

sudden stop in net inflows is caused by either local residents or foreign residents, we follow Cowan, De Gregorio, Micco and Neilson (2008) in calculating the contribution of gross inflows to the decline in the financial account. These authors distinguish among: (a) inflow-driven sudden stops when drops in the financial account are caused by foreign residents who cut off the domestic economy from foreign capital, (b) outflow-driven sudden stops when the financial account fallout is due to local residents who take their money abroad; and, (c) the mixed cases when we cannot distinguish a decrease in the financial account caused by lower gross inflows from those caused by higher gross outflows.

This paper consists of five sections. Following the introduction in Section 1, Section 2 reviews the literature on the determinants of sudden stops while Section 3 describes the data and some presents stylized facts on sudden stops, its sources and consequences. Section 4 presents the empirical evidence with limited dependent variable techniques. These techniques evaluate whether a certain set of indicators can help determine and predict the likelihood of a sudden stop. Section 5 concludes.

2. Brief Literature Review

In a series of seminal papers, Calvo (1998) and Calvo and Reinhart (2000) argue that, unlike developed economies, emerging market economies may frequently lose their access to the international capital markets. These large negative swings in capital inflows, which Calvo denoted as sudden stops, may render the country insolvent or dramatically reduce the productivity of its existing capital. This may result from large unexpected changes in relative prices and bankrupts. Sudden stop episodes are formally defined by Calvo, Izquierdo and Mejía (2004) as those events that meet the following two conditions: first, they should start when the first annual change in capital flows falls one standard deviation below the mean. Second, they should be "*unexpected*" (*i.e.* the annual variation in capital flows should be at least once two standard deviations below its sample mean), and "*persistent*" (it should end when the annual variation exceeds one standard deviation below its sample mean). Theoretically, Calvo et al. (2004, 2008) build a model that stresses the role of external imbalances (as proxied by massive current account deficits) and liability dollarization (which reflect currency mismatches) in creating the conditions for sudden stops. They point out that the vulnerability of an economy to sudden stops is exacerbated by the degree of dollarization in the private and public sectors, and the sensitivity of the real exchange rate (RER) to capital flow reversals. The authors suggest for the latter that external financing of the absorption of traded goods is smaller if the economy is more open. Hence, the impact of sudden stops in capital flows on RER is smaller the less leveraged is the absorption of traded goods. Calvo, Izquierdo and Mejía (2008) focus on large and unexpected fall in capital flows triggered by exogenous drivers —the so-called *systemic sudden stops*. In addition to the requirements stated in their previous paper (Calvo, Izquierdo and Mejía, 2004), the identified sudden stop window coincides with a period of sharp increase in aggregate spreads. They also argue that countries are more prone to sudden stops when

they have high (public and private) liability dollarization and when their exchange rate is very responsive to reversals in the financial account. Financial integration, on the other hand, may reduce the probability of sudden stops by allowing countries to access funds from abroad and increasing risk-sharing opportunities.

The empirical literature on sudden stops has usually chosen the set of forcing variables which determines the likelihood of sudden stops from the related literature on currency crisis, banking crisis and current account reversals. In this context it has been argued that countries' weaknesses and vulnerabilities would mater when investors rebalance their portfolios. Research in this area has specifically focused on the soundness of macroeconomic policy framework, the health of external and fiscal accounts, and the fragility in the financial sector.[5] Excessive expansion in monetary and fiscal policies (usually captured by high inflation and large fiscal deficits), external imbalances (as proxied by current account deficits and exchange rate overvaluation), and rapid credit creation may change investor's sentiment towards leaving the country. Although countries with current account deficits are more likely to have sudden stop (Calvo et al. 2004, 2008; Cavallo and Frankel, 2008; Kaminsky, 2008; Edwards, 2009), the literature fails to find a higher likelihood of sudden stops in countries with greater fiscal imbalances and a higher debt burden in the short term.[6] External shocks are also important as Edwards (2009) finds that an increase in the world real interest rate —by signaling a reduction of global liquidity— raises the propensity of emerging markets to sudden stops. However, he could not find any significant effect from terms of trade shocks. Moreover, Caner *et al.* (2009) finds that external vulnerability raises the likelihood of sudden stops and reduces the speed of adjustment of output to its equilibrium level.

In addition, Calderon and Kubota (2009a) examine the likelihood of a sharp depreciation in the RER which may ensue from sudden stops. They find that unsound macroeconomic policies and external imbalances (as proxied by high inflation and overvalued real exchange rates, respectively) explain the country's susceptibility to large real exchange rate depreciations. Positive terms of trade shocks, higher growth of their trading partners and self-insurance strategies (as proxied by the ratio of reserves to imports) reduce the vulnerability to large real depreciations. Analogous to the Cavallo and Frankel (2008) result with sudden stops, trade openness reduces the vulnerability to sudden stops while the effect of financial openness depends on the structure of external assets. While equity integration reduces the likelihood of large real depreciations, debt integration increases its likelihood.

[5] By healthy external and fiscal account we imply (inter-temporally) sustainable current account and fiscal balances.

[6] Calvo (2003) argue that highly indebted countries and those with smaller capacity to service debt are more susceptible to sudden stops. However, the evidence fails to confirm this hypothesis (Calvo et al. 2004, 2008).

3. The Data

This section describes the operational definition of sudden stops as well as that of sudden stops driven by either inflow contraction or outflow expansion. This section also enumerates the sources of data used to construct this variable. We then outline the definition and the sources of data and sudden stops and their determinants in our regression analysis.

3.1 Sudden Stops: Definitions and Facts

Calvo, Izquierdo and Mejia (2004) define a *sudden stop* as an episode that takes place when the reduction in net capital flows is more than one standard deviation from the mean (and there is at least one decline of more than two standard deviations below the mean) and ends when the annual change in capital flows is greater than one standard deviation below the mean. To identify these episodes, they use monthly data on the so-called "*capital flow proxy*" that results from subtracting the monthly change in international reserves from the trade balance. However, in this paper we follow the definition of *sudden stops* devised by Guidotti, Sturzenegger and Villar (2004). Their definition of sudden stops state that these events take place when the financial account falls one standard deviation above below the sample mean, and this decline in the financial account exceeds 5 percent of GDP. If we denote *FA* as the financial account, sudden stops will then occur when the following two conditions are met:

$$\Delta FA_t < \mu(\Delta FA_t) - \sigma(\Delta FA_t)$$
$$\Delta FA_t < -0.05$$
$$\Delta FA_t < -0.05$$

where Δ is the difference operator while μ and σ represent the mean and standard deviation operators, respectively.

Inflow-driven vs. Outflow-driven Sudden Stops. A decline in the financial account could be motivated by decisions of foreign residents and/or by those of domestic residents. In this context net inflows could sharply decline due to: (a) local residents pulling their capital out of the country, or (b) foreign residents not pouring new financial resources into the domestic economy. We note that these two different events have different policy implications.

To differentiate sudden stops caused by local residents' decisions from those mainly explained by the behavior of foreign investors we follow the identification procedure developed by Cowan, De Gregorio, Micco and Neilson (2008).[7] We first take the strategy implemented by

[7] Rothenberg and Warnock (2006) follow Calvo *et al.* (2004) methodology to identify sudden stops and, afterwards, they distinguish between *sudden flights* and *sudden stops*. They identify as *sudden flights* those episodes where the increase in gross financial outflows is greater than the decline in gross financial inflows. Moreover, *true sudden stops* are characterized by decisions of global investors and take place when the fall in gross inflows is greater than the pick-up in gross outflows.

Guidotti *et al* (2004) to identify drops in financial account. Then we follow the methodology devised by Cowan *et al* (2008) to distinguish between inflow-driven and outflow-driven sudden stops. Hence, we calculate the contribution of the decline in gross inflows to each sudden stop episode, S^I, as:

$$S_t^I = \frac{\Delta I_t}{\Delta I_t + \Delta O_t}$$

where ΔI_t and ΔO_t represent changes in gross inflows and gross outflows, respectively. The identification then proceeds as follows: an *inflow-driven sudden stop* takes place if $S_t^I > 0.75$ during a sudden stop episode. An *outflow-driven sudden stop* occurs if $S_t^I < 0.25$.

How Often Do Sudden Stops Occur? **Figure 1** shows the frequency of sudden stops for the sample of all countries (**82**), industrial and developing countries. We find 204 episodes of sudden stops over the period 1970-2007 –of which 159 episodes correspond to developing countries and the remaining 45 to industrial countries. We also observe that sudden stops are more likely to take place after 1990. Roughly, 70 percent of the sudden stop episodes occur in the 1990-2007 period (139 out of 204 events).

Are Sudden Stops Driven by Local or Foreign Investors? To distinguish sudden stops caused by decisions of local residents vis-à-vis foreign investors we first calculate the contribution of gross inflows to the fall in net inflows, S^I. **Figure 2** reports the value of its ratio for all sudden stops identified (204) as well as those only for industrial countries (45) and developing countries (159). The histograms depicted in **Figure 2** show that most sudden stop episodes among industrial and developing countries are driven by the behavior of foreign investors –that is, the number of events where $S^I > 0.75$ is greater than that of events where $S^I < 0.25$. In fact, approximately 20% of the full sample of sudden stops is driven by outflows (that is, $S^I < 0.25$) whereas almost 60% is inflow-driven ($S^I > 0.75$). The proportion of events caused by local investors pulling out resources from their countries elevates to 33% in the case of industrial countries. Finally, note that if we abstract from the episodes that cannot be unequivocally attributed to either lower inflows or greater outflows, **Figure 3** presents the histogram of sudden stop episodes by sources. We observe not only that the frequency of events increases after 1990 but also that outflow-driven sudden stops (linked to decisions by local residents) are more common after 2000. In addition, the distribution of inflow- vis-à-vis outflow-driven sudden stops over time is different (**Figure 3** and **Figure 4**). For instance, the inflow-driven sudden-stops appear to be bunched together in the periods 1978-83, 1988-91, and 1997-2001 whereas the outflow-driven ones seem to be more sparsely distributed over time.

Do their Macroeconomic Consequences Differ? It is important to point out that the distinction between inflow- and outflow-driven sudden stops does matter for macroeconomic outcomes. **Figure 5** depicts the behavior of the rate of growth in real GDP per worker, capital stock per worker, and total factor productivity (TFP) during inflow- and outflow-driven sudden stops. Whereas **Figure 6** shows the evolution of growth in real output, total consumption and

domestic investment, **Figure 7** shows the behavior of financial development indicators around sudden stop episodes. To understand the dynamics around sudden stops we will focus on discussion on the results for the full sample of countries.[8]

In **Figure 5** we observe that the behavior of growth in output per worker and of growth in either capital stock per worker or TFP is more volatile during outflow-driven sudden stops. The trough in growth per worker occurs in period *T* (time of event) for inflow-driven sudden stops while it occurs in period T+1 in the event of outflow-driven stops. Compared to outflow-driven episodes, we observe that the trough in growth of output per worker is slightly deeper in inflow-driven stops whereas the recovery in output per worker surpasses the pre-sudden stop output per worker levels. The growth rate of the stock of capital per worker decelerates more sharply in period T (the time of sudden stops) during outflow-driven sudden stops. In the aftermath, capital stock per worker appears to recover at a slower pace during outflow-driven episodes. Finally, TFP growth increases up to period T and collapses afterwards during outflow-driven episodes. In the meantime, recovery of TFP growth seems more robust in the aftermath of inflow-driven sudden stops.

Figure 6 shows the behavior of GDP growth, total consumption and domestic investment during inflow- and outflow-driven episodes. Real GDP growth declines in period *T* is sharper during inflow-driven sudden stops. **Table 3** complements the graphical analysis with some naïve regressions that run macroeconomic outcomes on their lag values, sudden stops and inflow-driven sudden stop dummies. For instance, when the sudden stop takes place (*T*), growth in GDP per worker would be more severely affected (by 1.5 percentage points) if the sudden stop is driven by foreign investors. The same story holds for TFP growth while the more deleterious effects of inflow-driven sudden stops on capital per worker take effect in period *T+1*. In addition, growth rates in real GDP, total consumption and domestic investment decline at a faster rate at the moment of the inflow-driven sudden stops than the moment of otherwise. (See **Table 3** for more details.)

Figure 7 depicts the behavior of private credit, leverage, bank assets, stock market capitalization and (private and public) bond market capitalization around inflow- and outflow-driven sudden stops. The figure shows that the amplitude of the cycle in private credit appears to be larger during outflow-driven sudden stops (vis-à-vis inflow-driven ones) in both industrial and developing countries. Private credit among industrial countries tends to decline after the inflow-driven sudden stops take place as opposed to outflow-driven stops. Among developing countries the slowdown in the private credit to GDP ratio is more pronounced when sudden stops are driven by outflows. We are unable to find a systematic pattern of behavior for the leverage of the banking system around sudden stops among industrial countries. However, we observe a sharp process of deleveraging among developing countries after inflow-driven sudden stops take place. Regardless of the source of sudden stops we observe a build-up of bank assets among industrial countries. For developing countries bank assets start to decline

[8] Note that the analysis of the behavior of these macroeconomic series during episodes of sudden stops for the full sample of countries is qualitatively similar to that of developing countries.

after reaching a peak at the initial period of sudden stops. Stock market capitalization drops steadily after reaching a peak in T-1 and T for outflow- and inflow-driven sudden stops among industrial countries, respectively. Such marked pattern is not observed for developing countries. Private bond market capitalization (as percentage of GDP) in advanced countries drops in the aftermath of inflow-driven sudden stops while it grows after the event of outflow-driven ones. For developing countries the depth of private bond markets grows steadily up to period T+1 with outflow-driven sudden stops and it sluggishly declined by period T+3 with inflow-driven ones. Finally, public bond market capitalization (as a ratio to GDP) in industrial countries increases after the occurrence of inflow-driven sudden stops while it slightly declines with outflow-driven ones. For developing countries its decline reaches its trough in period T and then we observe a recovery. The drop is sharper when sudden stops are driven by outflows.

Net Reversals vis-à-vis Gross Reversals. We have already characterized the classification of sudden stops according to whether reductions in the financial account are explained by decreasing inflows or by growing outflows of capital. However, this procedure excludes episodes where cutbacks in foreign flows of capital into the country are offset by outflows. To what extent does the two-way capital flow dynamics account for the joint likelihood of gross and net reversals? In order to answer this question we construct a direct measure of gross inflow reversals and compare the incidence of these events with net reversals (*i.e.* sudden stops). We define gross inflow reversals (or, hereafter, gross reversals) as periods where the change in non-FDI inflows (expressed as a deviation from the average change for the country over the entire period and scaled by the trend component of GDP) is below -5 percent. As suggested by Cowan et al. (2008), FDI flows are excluded from this definition in order to capture predominantly financial shocks.

Table 1 reports the frequency of gross inflow reversals and net reversals for our effective sample of 82 countries from 1970 to 2007. While we identify 274 gross inflow reversals, only one hundred sixteen (42 percent) coincide with sudden stops (*i.e.* net reversals). This suggests that outflows mitigate the effects of inflow-related sudden stops in most of the cases (that is, one hundred fifty eight inflow reversals). Interestingly, a higher share of gross inflow reversals coincide with net reversals in developing countries (97 out of 171 or 57 percent) than in developed countries (19 out of 103 or 18 percent). For emerging markets this percentage is only slightly higher than for developing countries as a whole (59 percent).

Sudden Stops and Crisis. The anatomy of credit booms presented by Mendoza and Terrones (2009) shows that not all lending booms lead to a banking crisis. In this context we also explore whether all sudden stop events lead to either a currency or a banking crisis. To the extent that drops in the financial account precede currency runs or banking runs, these events may lead to crisis episodes. Currency crises and banking crises are defined as in Reinhart and Rogoff (2008).[9]

[9] According to these authors a banking crisis is characterized by two types of events: (1) if bank runs lead to the closure, merging, or takeover by the public sector of one or more financial institutions (as in Venezuela in 1993 or Argentina in 2001); and (2) even in the absence of bank runs, there is closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) marks the start of a string of

Table 2 reports the probability of having a currency or banking crisis in period t and period t+1 when a net or gross reversal takes place in period t. It is interesting to show that when there is a net reversal, a currency crisis is more likely to take place simultaneously for developing countries —and that likelihood is even higher among emerging markets. However, if it occurs in period t+1, it is more likely to happen in industrial countries. We should note that the frequency is smaller among the latter group. The likelihood of having currency crisis either in period t or t+1 is smaller in the event of gross reversals (vis-à-vis a net reversal), and that likelihood is uniformly smaller among industrial nations.

Finally, the probability of having a banking crisis (either in period t or t+1) is smaller for industrial countries than for developing countries regardless of either a gross or net reversal in capital flows taking place in period t. Emerging markets, on average, are more likely to have a banking crisis after sudden stop episodes than developing countries as a whole. This result may underline the higher exposure of emerging markets to cross-border asset trading.

3.2 Sources of Data for the Determinants of Sudden Stops

We describe the sources of data used to approximate the set of forcing variables that may affect the likelihood of sudden stops (as measured by drops in the financial account) as well as inflow- and outflow-driven sudden stops. Our choice of explanatory variables follows the empirical literature on the determinants of (net) sudden stops (*e.g.* Calvo, Izquierdo and Mejia, 2004), the determinants of currency crisis (*e.g.* Frankel and Rose, 1996; Berg and Pattillo, 1999; Milesi-Ferretti and Razin, 2000), current account reversals and capital flow contractions (*e.g.* Milesi-Ferretti and Razin, 1998; Edwards, 2005, 2007).

Economic performance, as measured by the growth rate of GDP, is assumed to reduce the likelihood of sudden stops taking place. GDP data in US dollars at constant prices, obtained from the World Bank's World Development Indicators (WDI), is used to compute the growth rate. We also include indicators of the soundness and stability of the macroeconomic policy framework as determinants of sudden stops. It has been argued that sudden stops are less likely to take place in countries with sounder and more stable macroeconomic policy framework. Hence, we include indicators of monetary stability, exchange rate flexibility and the health of external and fiscal positions.

Monetary stability is proxied by the rate of inflation, as measured by the rate of change of the consumer price index, and its data is obtained from the International Monetary Fund's International Financial Statistics (IFS). We include not only the rate of inflation but we also include the inflation rate interacted with a dummy that takes the value of 1 when CPI inflation exceeds 50% per year. The latter variable captures high inflation. Exchange rate flexibility is measured by the coarse classification of exchange rate regimes developed by Reinhart and

---

similar outcomes for other financial institutions (as in Thailand 1996–97). We rely on existing studies of banking crises and on the financial press.

Rogoff (2004) and updated by Ilzetzky, Reinhart and Rogoff (2009). This index goes from 0 to 14 and higher values signal a more flexible exchange rate arrangement. Healthier external and fiscal positions are approximated by the current account balance and the central government budget surplus. Both variables are expressed as percentage of GDP and the data are obtained from WDI and IFS. Measures of the health of the financial sector are also included as determinants of sudden stops. Among them we have bank credit, bank deposits, bank assets and the credit to deposit ratio. All these variables are expressed as percentage of GDP except for the credit to deposit ratio which is taken from Beck, Demirguc-Kunt and Levine (2000) and Beck and Demirguc-Kunt (2009).[10]

A country's vulnerability to sudden stops is heightened by its exposure to international good and asset markets. In this respect we include indicators of trade and financial openness. Our measure of trade openness includes the ratio of real exports plus imports to GDP and natural resource abundance. The latter is measured by the net exports per capita of agricultural raw materials, food, fuel, metals and mineral ores. The data is compiled from WDI. Openness to the world capital markets is measured from Kose, Prasad and Terrones (2006), as the ratio of net financial flows to GDP (*i.e.* net capital flows). To test the consistency of the financial openness indicators we break down this measure into net equity vis-à-vis net debt flows, and its decomposition into FDI, portfolio investment and other investment. Then we distinguish between local and foreign residents' decisions by including gross inflows and outflows instead of net inflows. The data on net and gross flows is obtained from the IMF's Balance of Payments Statistics. Finally, external shocks are added to the regression as controls. We proxy terms of trade shocks as the annual percentage change in the terms of trade index, and the data is collected from WDI. The world real interest rate is proxied by the money market rate of the reference country as in Di Giovanni and Shambaugh (2008) and this indicator is gathered from IFS.

4. Empirical Evidence

This section aims to set up the empirical assessment on the determinants of sudden stops and presents the evidence obtained from our regression analysis. We use an *effective* sample of 82

[10] The health of the financial system can be captured more accurately by another comprehensive set of indicators such as ratio of liquid assets to deposits and short-term funding, bank capital to assets, non-performing loans (NPLs) to total gross loans, the ratio of provision to NPLs relative to total gross loans, and regulatory capital to risk-weighted assets among others. However, there are serious constraints on time series availability for these series (e.g. since 2000 at best) that prevents us for using them in our regression analysis.

countries with annual information from 1970 to 2007.[11] We first test whether sudden stops are determined by the indicators that capture sound macroeconomic policy frameworks, healthy financial sectors, outward orientation of the economy and external shocks. Then, we examine whether the impact varies according to the source of sudden stops. Finally, we assess whether some particular features of the domestic economy (exchange rate regime in place, liability dollarization and openness) amplify the impact of external shocks on the likelihood of sudden stops.

4.1 Set-up

Our dependent variable is the binary variable *SS* that can only have two possible outcomes: it can take the value of 1 when there is a sudden stop (net, inflow-driven, outflow-driven or mixed) and 0, otherwise. *X* is a vector of explanatory variables that influence the outcome *SS*. Hence, the model takes the form:

$$P(SS = 1 \,/\, X) = \Phi(X'\beta)$$

where the left hand side of the equation represents the probability *P* of a sudden stop occurring given *X*, and Φ is the *Probit* function. Our goal is to estimate the vector β of parameters by maximum likelihood. We specify the *Probit* model as a latent variable model and assume that there exists a random variable SS^* such that:

$$SS^* = X'\beta + \xi$$

where ξ represents the error term, and SS^* indicates whether this latent variable is non-zero:

$$SS = \begin{cases} 1 & if \;\; sudden\; stop \\ 0 & otherwise \end{cases}$$

We denote our dependent variables as (net) sudden stops (*SS*), inflow-driven sudden stops (*iSS*), outflow-driven sudden stops (*oSS*), and the mixed cases (*mSS*). The definition of these binary variables is summarized in Section 3.1 while the variables that comprise the *X* matrix are described in Section 3.2. Note that all explanatory variables are lagged one period to avoid reverse causality issues.

4.2 Baseline Regression

[11] We collected annual data for 185 countries on capital flows and the determinants of sudden stops from 1970 to 2007. We excluded from our sample countries with less than 9 consecutive observations of capital flows and small countries (i.e. countries with population less than 1 million in 2007 and gross national income per capita lower than 2,000 US dollars). Those restrictions along with other data availability problems in the set of forcing variables rendered an effective sample of 82 countries.

Table 4 shows our baseline regression on the determinants of sudden stops. Our dependent variable is the binary variable that takes the value of 1 when there is a (net) sudden stop –as defined by Guidotti *et al.* (2004). To compute this binary variable we need to compute the annual variation in the financial account to GDP ratio. To construct this ratio we use three different definitions of the financial account: the first definition, *FA*0, is the sum of the net FDI inflows, net portfolio inflows, and net other investment inflows. The second, *FA*1, results from the sum of FA0 and the net flows of financial derivatives and, finally, *FA*2, is the outcome of including net errors and omissions to the *FA*1 measure. The financial account is normalized by the permanent component (trend) of GDP, following Cowan et al. (2004). For robustness purposes we use different methods to compute the stochastic trend of GDP —say, Hodrick-Prescott filter, the band-pass filter, the 3-year moving average and the actual GDP lagged one period. We report the baseline regression results for all those different definitions of the financial account to GDP ratio in **Table 4**.

We first discuss the results obtained with the *FA0* definition of the financial account and, next, we outline whether those results hold while changing its definition to *FA*1 or *FA*2. In columns [1] through [4] of **Table 4** we present the coefficient estimates for our baseline regression using our *FA*0 definition of the financial account. In most cases, real GDP growth in the period *t* is negatively associated to the likelihood of a sudden stop taking place in the period *t+1*. This shows that higher GDP growth would subsequently reduce the likelihood of sudden stops.

Next, we discuss the role of the macroeconomic policy framework. We fail to find a significant relationship among high inflation, fiscal imbalances and the likelihood of sudden stops. However, exchange rate flexibility (as proxied by an index of exchange rate regimes that takes higher values if the arrangements are more flexible) enters with a negative and significant coefficient, and the current account coefficient is significantly positive. Hence, countries with less flexible exchange rate arrangements are more likely to have sudden stops whereas current account surpluses precede sudden stops. Finally, we find that an increase in the private credit to GDP ratio tends to precede the occurrence of sudden stops (with the coefficient being significant in some specifications).

It is mostly argued that countries with large exposure to the world market of goods and assets (proxied by trade openness, natural resource abundance and financial openness) are prone to sudden stops. The coefficient of trade openness is not robust –it is only significant in column [3]. We also find that natural resource abundant countries (proxied by the net exports of natural resources per capita) are more likely to experience sudden stops. Financial linkages –as captured by larger net financial flows– have a positive and robust coefficient in our regression analysis. This implies that countries with tighter international financial linkages are going to be more vulnerable to sudden stops. We also test whether external shocks may play a role in determining the likelihood of sudden stops. Our findings show that higher terms of trade may lead to lower probability of a subsequent sudden stop, and that increasing the world interest rate may be associated with a higher likelihood of sudden stops taking place although the relationship is not statistically robust.

Sensitivity of the Baseline Results to Different Samples of Countries

Table 5 reports our baseline regression for the full sample of countries (82) as well as for the samples of industrial countries (22), developing countries (60) and middle-income countries (52). The sudden stop episode, our dependent variable, is calculated with using annual variations of the financial account to Hodrick-Prescott trend GDP for the different definitions of financial account (*FA*0, *FA*1, and *FA*2). We note that our discussion will focus on the first four columns of **Table 5** where we report the results of the sudden stop analysis with the *FA*0 definition.

Our results show that, first, higher growth significantly contributes to a reduction in the likelihood of sudden stops in the next period for developing countries and middle-income countries (MICs). Second, the flexibility of the exchange rate arrangement is also a key in reducing the vulnerability of developing countries and MICs to sudden stops. However, it does not seem to play a role among industrial countries. Third, industrial countries with current account surpluses in period T are more likely to have sudden stops in the next period T+1. Current account deficits in period T would spell sudden stops of inflows for developing countries and MICs; however, the coefficient is not statistically significant. Fourth, rising bank credit (that outpaces growth in real output) may help signal the probability of sudden stops occurring in the subsequent period for developing countries and MICs. Fifth, natural resource abundant MICs are more prone to have sudden stops in net capital inflows. The evidence is not robust for either industrial or developing countries. Sixth, international financial integration heightens the vulnerability of industrial, developing countries and MICs to sudden stops. Finally, the incidence of external shocks does not seem to play a role in elevating the propensity of the country to sudden stops.

Finally, when we include (net) financial derivatives and net errors and omissions in our financial account (definition *FA*2), movements in the world interest rate may affect the likelihood of sudden stops. This effect is mainly driven by industrial countries.

4.3 Sources of Sudden Stop: Local vis-à-vis Foreign Residents' Decisions

This subsection aims to examine whether the results presented above hold for different types of sudden stops. As we argued above, the decline in the financial account –used to identify sudden stops– could obey decisions of global investors (inflow-driven) or local residents (outflow-driven). In **Table 6** we report the baseline regression (reported both in Tables 4 and 5) for sudden stops (*SS*) as defined by Guidotti et al. (2004), and we also regress the same specification for inflow-driven sudden stops (*iSS*), outflow-driven sudden stops (*oSS*) and mixed cases (*mSS*). We present the evidence for the full sample of countries, for the four (4) different types of sudden stops and for the three (3) different definitions of the financial account (*FA*0, *FA*1, *FA*2) in **Table 6**.

When we examine the results for inflow- and outflow-driven sudden stops vis-à-vis (net) sudden stops –as defined by Calvo and operationalized by Guidotti et al. (2004)–, we find that the driving forces behind inflow- and outflow-driven sudden stops may differ. In what follows, we will discuss the differences in the coefficient estimates for the equation of inflow-driven sudden stops vis-à-vis outflow-driven ones. First, growth in real GDP in period t helps reduce the likelihood of inflow-driven sudden stops in the next period t+1 whereas it has no significant effect on outflow-driven ones. Regarding the macroeconomic policy framework the flexibility of the exchange rate arrangement seems to matter for global investors rather than local residents. Countries with more flexible exchange rate arrangements are less prone to sudden stops driven by global investors. However, the flexibility of the exchange rate regime seems to play no role in driving local residents' decision to pull resources out of the country. Moreover, current account surpluses in the period t seem to have preceded sudden stops caused by local residents. Analogously, rapid increases in credit (that exceeds the growth of output) would raise the likelihood of subsequent sudden stops driven by outflows (*i.e.* local residents).

The exposure of the domestic country to the world good and asset markets is assumed to have an impact on the likelihood of sudden stops. The evidence presented in **Table 6** shows that natural resource abundant countries may be more prone to inflow-driven sudden stops. This may be linked to the volatility of the export (and, maybe, tax) base (which, in turn, is associated to the heightened volatility of terms of trade shocks). According to our findings, countries which are tightly linked with the world capital market are more prone to both inflow- and outflow-driven sudden stops. Finally, an increase in the world real interest rate would tend to raise the likelihood of inflow-driven sudden stops in the subsequent period. This may be partly explained by return-chasing global investors who stop their investment flows into the domestic economy.

Table 7 presents analogous regression estimates to those of **Table 6** for different sub-samples of countries: industrial countries, developing countries, and middle-income countries (*MIC*s).

Industrial Countries. We show that higher GDP growth would reduce the vulnerability to inflow-driven sudden stops and have no impact on outflow-driven ones. Current account surpluses precede the event of either inflow- or outflow-driven sudden stops among industrial countries. Excess credit growth (relative to output growth) would raise the likelihood of subsequent outflow-driven sudden stops. Finally, both inflow- and outflow-driven sudden stops are more likely to happen in countries with rising financial openness.

Developing Countries. The soundness and stability of macroeconomic policy framework – proxied by low inflation, flexible exchange rate arrangements and healthy fiscal and external balances– does not seem to matter when local investors decide to pull their capital out of the domestic country. However, the flexibility of exchange rate regimes seems to lower the vulnerability of the domestic country to inflow-driven sudden stops. In contrast to industrial countries excess credit growth would raise the probability of inflow-driven sudden stops. This finding implies that credit booms may increase the likelihood of foreign investors refraining from pouring more capital into the economy. International financial integration does heighten

the vulnerability of countries to both inflow- and outflow- driven sudden stops. Trade openness and natural resource abundance do not seem to play a role in driving the likelihood of any source of sudden stops. The same holds external shocks. Finally, the results for middle-income countries are qualitatively similar to those of the sample of developing countries.

Robustness to Different Financial Indicators

Table 8 replicates the first four columns of **Table 6**–columns [1], [5], [9], and [13] of **Table 8**– and examines the robustness of our results to other indicators of financial development. In our baseline regression we use the ratio of bank credit to GDP. In Table 8 we present estimates with other financial indicators such as the ratio of bank deposits to GDP, the credit to deposit ratio, and the ratio of bank assets to GDP. While analyzing the determinants of (net) sudden stops, we find that bank credit and bank deposits have a significant coefficient, however, the credit to deposit ratio plays no role. In the case of inflow-driven sudden stops indicators of the health of the financial system do not seem to have a significant effect on the likelihood of sudden stops driven by global investors. In the case of outflow-driven sudden stops only bank credit has a positive and significant coefficient.

Robustness to Different Indicators of Financial Openness

Table 9 examines the sensitivity of our baseline results to different indicators of financial openness. In addition to our baseline results with net financial inflows –columns [1], [5], [9], and [13] of **Table 9**– we now account for the different types of net flows: (a) net equity vis-à-vis net debt flows, (b) net FDI, net foreign portfolio and net other investment flows, and (c) net FDI, net foreign portfolio equity flows and net debt flows.

While looking at the determinants of (net) sudden stops, we find that higher net equity and net debt flows raise the vulnerability of the domestic country to sudden stops. The same results hold when we include in our regression, FDI, foreign portfolio and other investment. We observe that the coefficient of (net) other investment inflows is larger. In the case of inflow-driven sudden stops **Table 9** shows that rising equity and debt flows seem to increase the vulnerability to sudden stops caused by global investors (column [7] of **Table 9**). The higher coefficient of net equity flows is explained by the dynamics of foreign portfolio (column [6]) or foreign portfolio equity flows (column [8]). In fact, the smallest coefficient is exhibited by net FDI inflows. This implies that FDI is the type of flow which would have the smallest impact on the vulnerability of the country to inflow-driven sudden stops. FDI also has the largest positive coefficient vis-à-vis other types of flows (see columns [10] and [12]) in our outflow-driven sudden stop regressions. In contrast to **Table 9**, we use gross inflows and gross outflows as measures of financial openness in **Table 10**. All gross inflows and outflows have a positive and significant coefficient. Equity-type flows (FDI and foreign portfolio inflows and outflows) have a smaller coefficient than that of debt-type flows (other investment). The coefficient of FDI is positive and significantly lower than that of foreign portfolio and other investment. For outflow-driven sudden stops, this result does not hold.

Investigating Amplifiers in the Domestic Economy

In Tables 11 through 13 we investigate whether some characteristics of the economy amplify the effect of external shocks on the likelihood of sudden stops (net, inflow-driven, outflow-driven and mixed cases). **Table 11** examines whether the exchange rate regime acts as a buffer to external shocks. We add the interaction between terms of trade shocks and the index of exchange rate regime as well as the interaction between the world real interest rate and the exchange rate regime. We fail to find a significant coefficient for either of these interactions. **Table 12** evaluates whether the impact of external shocks on the likelihood of sudden stops is heightened in countries with higher extent of dollarization. For this analysis we interact the degree of deposit dollarization with both terms of trade shocks and the world real interest rate. We fail to find a significant coefficient for all interaction effects. Finally, **Table 13** tests whether trade and financial openness mitigate or amplify the effects of external shocks on the probability of sudden stops. A rise in the world real interest rate would raise the likelihood of (net) sudden stops and outflow-driven sudden stops in countries that are highly integrated to international capital markets.

5. Concluding Remarks

The main goal of our paper is to examine whether the (sensitivity and strength of the) determinants of inflow- and outflow-driven sudden stops may differ. Hence, we test whether inflow-driven and outflow-driven sudden stops are explained by a similar set of forcing variables. Does the decision of local investors to pull their funds out of the country respond to the same determinants as that of foreign investors to stop putting their capital into the domestic economy? We argue that if this is not the case, the set of policies required to prevent sudden stops may differ depending upon the type of sudden stops afflicting the domestic economy.

We first show some stylized facts on the different types of sudden stops. We find that: first, sudden stops are differently distributed over time. While inflow-driven sudden stops are usually agglomerated over time, outflow-driven ones are more isolated. Outflow-driven sudden stops also have become a more common theme in the 2000s. Second, the distinction among types of sudden stops does matter for macroeconomic outcomes. A sharp reduction of foreign capital into the domestic economy puts an additional cost in terms of lower GDP growth and smaller growth in gross domestic investment. Finally, a back-of-the-envelope calculation shows that growth in GDP per worker at the moment of sudden stops would be more severely affected (by an additional 1.5 percentage points) if the sudden stops are caused by global residents reducing their inflows to the domestic economy. The same story holds for TFP growth.

These findings may indicate that the forces driving inflow-driven sudden stops may differ from those driving outflow-driven sudden stops. Hence, we conduct our regression analysis on the determinants of the likelihood of sudden stops taking place by estimating a *Probit* model using an "*effective*" sample of 82 countries with annual information over the period 1970-2007. We find the following results:

First, global investors are more likely to pull out or stop bringing their funds to countries with volatile export base (as proxied by natural resource abundance), and poor economic performance (as signaled by low growth). Rigid exchange rate regimes and high integration to financial markets heighten the vulnerability of the country to the whims of global investors.

Second, local residents are prone to invest their money abroad when the macroeconomic framework is unsound (as proxied by high inflation) and/or when there is a boom in earnings from sales abroad (i.e. current account surpluses). Rising international financial integration facilitates local investors to divert resources into foreign assets.

Third, financial openness makes the domestic country more vulnerable to sudden stops caused by either global investors or local residents. Inflow-driven sudden stops are less frequent in countries with higher shares of FDI (net and gross) in total flows (net and gross) although local residents are more likely to invest abroad (outflow-driven sudden stops) in countries with higher shares of FDI.

Fourth, the health of the financial system seems to affect only the decisions of local investors to pull their funds out of the country (outflow-driven sudden stops). This result, however, is not robust to other indicators.

Fifth, some policy implications can be extracted from our empirical analysis. We find that domestic investors invest their capital abroad in times of macroeconomic mismanagement –as signaled by the lack of price stability– or when there are high external savings. Regarding the former, a coherent and sustainable macroeconomic framework that guarantee price stability (low inflation) and shield the economy from destabilizing shocks required. The latter refers to a stylized fact observed in emerging markets: countries exporting savings and importing FDI. According to a recent strand of the literature, this trend reflects financial system inefficiencies associated with underdeveloped financial markets –which, in turn, raise the cost of debt financing for domestic firms (Caballero, Farhi and Gourinchas, 2008; Valderrama and Smith, 2009). Hence, policies towards the deepening of local financial markets may help domestic agents redirect their funds towards a richer menu of financial instruments at home.

The likelihood of sudden stops in gross inflows to the domestic country (by foreign investors) is lower when the domestic economy is growing and the world interest rate is lower. To some extent, push factors such as the evolution of the world interest rate help determine the entry of foreign capital. Hence, policymakers should build sound macroeconomic policy frameworks that shield the economy from fluctuations in external factors —such as, movements in the world interest rates. If lower interest rates in industrial economies (ceteris paribus the level of global

risk aversion) lead to rising financial flows and financial excesses in the domestic financial markets (through booms in credit and/or equity markets, and real appreciation of the currency), policymakers may implement macro-prudential policies to stem the excess creation of credit. Finally, policymakers can affect the pull factors of capital flows through their decisions (e.g. growth in the domestic economy). In this respect, the design of policies to maintain sustained growth in real economic activity (e.g. innovation, investment climate, capital market reform, among others) may play a crucial role.

Finally, further avenues of research arise from our analysis between inflow- and outflow-driven sudden stops. We are currently examining the linkages between upturns and downturns in foreign capital and the evolution of domestic credit to the private sector. Do credit cycles and capital-flow cycles co-move? Are all sudden stops accompanied by drops in domestic credit? If not, is the impact different from those of other types of sudden stops?

References

Beck, T., A. Demirgüç-Kunt, and R. Levine, 2000. "A New Database on Financial Development and Structure." The World Bank Economic Review 14, 597-605.

Beck, T., and A. Demirgüç-Kunt, 2009. "Financial Institutions and Markets Across Countries and over Time: Data and Analysis." The World Bank Policy Research Working Paper No. 4943, June

Becker, T., and P. Mauro, 2006. "Output drops and the shocks that matter." IMF Working Paper WP/06/172, July

Berg, A., and C. Pattillo, 1999. "Are currency crises predictable?" IMF Staff Papers 46(2), 107-138

Borensztein, J. De Gregorio, and J.W. Lee, 1998. "How Does Foreign Direct Investment Affect Economic Growth?" *Journal of International Economics 45(1):* 115-135

Calderon, C., and M. Kubota, 2009a. "Does higher openness cause more real exchange rate volatility ?" The World Bank Policy Research Working Paper 4896, April

Calderon, C., and M. Kubota, 2009b. "Does financial openness lead to deeper domestic financial markets?" The World Bank Policy Research Working Paper 4973, June

Calvo, G.A., Izquierdo, A., Mejia, L.F., 2004. "On the empirics of sudden stops: The relevance of balance-sheet effects." NBER Working Paper 10520, May

Calvo, G.A., Izquierdo, A., Mejia, L.F., 2008. "Systemic sudden stops: The relevance of balance-sheet effects and financial integration." NBER Working Paper 14026, May

Cavallo, E.A., and J.A. Frankel, 2008. "Does openness to trade make countries more vulnerable to sudden stops, or less? Using gravity to establish causality." *Journal of International Money and Finance 27*, 1430-1452

Chinn, M.D., and H. Ito, 2006. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions." *Journal of Development Economics 61(1):* 163-192.

Cowan, K., and J. De Gregorio, 2005. International borrowing, capital controls and the exchange rate lessons from Chile. NBER Working Paper 11382

Cowan, K., De Gregorio, J., Micco, A., Neilson, C., 2008. "Financial diversification, sudden stops, and sudden starts." In: Cowan, K., Edwards, S., Valdes, R.O. (Eds.), *Current Account and External Finance*. Santiago, Chile: Central Bank of Chile, pp. 159-194

Di Giovanni, J., and J.C. Shambaugh, 2008. "The impact of foreign interest rates on the economy: The role of the exchange rate regime." *Journal of International Economics 74(2)*, 341-361

Edwards, S., 2005. "Capital controls, sudden stops and current account reversals." NBER Working Paper 11170, March

Edwards, S., 2007. "Capital controls, capital flow contractions, and macroeconomic vulnerability." *Journal of International Money and Finance 26*, 814-840

Edwards, S., 2009. "Sequencing of reforms, financial globalization, and macroeconomic vulnerability." *Journal of the Japanese and International Economies 23*, 131-148

Faucette, J.A., A.D. Rothenberg, and F.E. Warnock, 2005. "Outflows–induced sudden stops." *The Journal of Policy Reform 8(2)*, 119-129

Frankel, J.A., and A.K. Rose, 1996. "Currency crashes in emerging markets: An empirical treatment." *Journal of International Economics 41(3-4)*, 351-366

Grossman, G., and E. Helpman, 1991. *Innovation and Growth in the Global Economy*. Cambridge, MA: The MIT Press

Guidotti, P., Sturzenegger, F., Villar, A., 2004. "On the consequences of sudden stops." *Economia 4(2)*, 171-214

Haskell, J.E., S.C. Pereira, and M.J. Slaughter, 2007. "Does Inward Foreign Direct Investment Boost the Productivity of Domestic Firms?" Review of Economics and Statistics 89(3): 482-496.

Ilzetzky, E.O., C.M. Reinhart, and K.S. Rogoff, 2009. "Exchange Rate Arrangements Entering the 21st Century: Which Anchor Will Hold?" Cambridge, MA: Harvard University, *manuscript*

Kaminsky, G.L., C.M. Reinhart, and C.A. Vegh, 2005. "When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies." In: Gertler, M., and K. Rogoff (Eds.) *NBER Macroeconomics Annual 2004*. Cambridge, MA: The MIT Press, pp. 11-82

Klein, M.W., and G.P. Olivei, 2008. "Capital account liberalization, financial depth, and economic growth." *Journal of International Money and Finance 27(6)*: 861-875

Kose, M.A., S. Elekdag, and R. Cardarelli, 2009. "Capital Inflows: Macroeconomic Implications and Policy Responses." IMF Working Papers 09/40

Kose, M.A., E. Prasad, K.Rogoff, and S.J. Wei, 2009a. "Financial Globalization: A Reappraisal." IMF Staff Papers 56(1), 8-62

Kose, M.A., E.S. Prasad, K. Rogoff, and S.J. Wei, 2009b. "Financial Globalization and Economic Policies." CEPR Discussion Paper 7117

Kose, M.A., E.S. Prasad, and M.E. Terrones, 2006. "How do trade and financial integration affect the relationship between growth and volatility?" *Journal of International Economics 69(1)*, 176-202

Lane, P.R., and G.-M. Milesi-Ferretti, 2001. "The external wealth of nations: measures of foreign assets and liabilities for industrial and developing countries." *Journal of International Economics 55*, 263-294

Lane, P.R., and G.-M. Milesi-Ferretti, 2007. "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004." *Journal of International Economics* 73, 223-250

Mendoza, E.G., and M.E. Terrones, 2008. "An Anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data." NBER Working Papers 14049, May

Milesi-Ferretti, G.M., and A. Razin, 1998. "Sharp Reductions in Current Account Deficits: an Empirical Analysis." European Economic Review 42, 897-908

Milesi-Ferretti, G.M., and A. Razin, 2000. "Current-Account Reversals and Currency Crises: Empirical Regularities." In: Krugman, P.R. (Ed.) *Currency Crises*, Chicago, IL: University of Chicago Press for NBER

Reinhart, C.M., and V. Reinhart, 2008. "Capital Flow Bonanzas: An Encompassing View of the Past and Present." In: Frankel, J.A., and C. Pissarides (Eds.) NBER International Seminar on Macroeconomics, *forthcoming*

Reinhart, C.M., and K.S. Rogoff, 2004. "The Modern History of Exchange Rate Arrangements: A Reinterpretation." *The Quarterly Journal of Economics 119(1)*, 1-48

Rogoff, K., 2007. "Impact of Globalization on Monetary Policy." In: Federal Reserve Bank of Kansas City (Ed.) *The New Economic Geography: Effects and Policy Implications*. Kansas City Federal Reserve "Jackson Hole" Conference.

Reinhart, C.M., and K.S. Rogoff, 2008. "Banking Crises: An Equal Opportunity Menace." NBER Working Paper No. 14587, December

Rothenberg, A.D., Warnock, F.E., 2006. "Sudden flight and true sudden stops." NBER Working Paper 12726, December

Tytell, I., and S.J. Wei, 2005. "Global Capital Flows and National Policy Choices." Washington, DC: International Monetary Fund, July

Table 1
Coincidence between net and gross reversals

Region	Gross & net reversals coincide	Only gross reversal	Only net reversals
Industrial Countries	19	84	21
Developing Countries	97	74	64
- Emerging markets	55	39	25
ALL Countries	116	158	85

Note: We calculated the net and gross reversals in capital flows using the FA1 definition of the financial account (net FDI liabilities, net PI liabilities, net OI liabilities, and net financial derivatives) while gross reversals are calculated using gross non-FDI capital inflows (i.e. gross PI, OI and financial derivatives liabilities).

Table 2
Coincidence between net reversals, gross reversals and crisis

Probability	All Countries	Industrial Countries	Developing Countries	Emerging Markets
P(Currency crisis in t/ Net reversal in t)	0.1561	0.0909	0.1739	0.2125
P(Currency crisis in t+1/ Net reversal in t)	0.1366	0.2045	0.1180	0.0750
P(Currency crisis in t/ Gross reversal in t)	0.1227	0.0566	0.1637	0.2021
P(Currency crisis in t+1/ Gross reversal in t)	0.1155	0.1226	0.1111	0.0957
P(Currency crisis in t/ NR-GR coincide in t)	0.1500	0.0000	0.1856	0.2182
P(Currency crisis in t+1/ NR-GR coincide in t)	0.1667	0.3043	0.1340	0.0909
P(Banking crisis in t/ Net reversal in t)	0.0683	0.0455	0.0745	0.1375
P(Banking crisis in t+1/ Net reversal in t)	0.0341	0.0227	0.0373	0.0625
P(Banking crisis in t/ Gross reversal in t)	0.0686	0.0377	0.0877	0.1489
P(Banking crisis in t+1/ Gross reversal in t)	0.0433	0.0377	0.0468	0.0532
P(Banking crisis in t/ NR-GR coincide in t)	0.1083	0.0870	0.1134	0.1818
P(Banking crisis in t+1/ NR-GR coincide in t)	0.0417	0.0435	0.0412	0.0545

Note: We calculated the net and gross reversals in capital flows using the FA1 definition of the financial account (net FDI liabilities, net PI liabilities, net OI liabilities, and net financial derivatives) while gross reversals are calculated using gross non-FDI capital inflows (i.e. gross PI, OI and financial derivatives liabilities). The definition of currency and banking crisis episodes follows Reinhart and Rogoff (2008).

Table 3

Growth performance during sudden stops

Least squares (including country- and time-specific dummies)

	Growth per worker			Growth rate		
	GDP	**Capital**	**TFP**	**GDP**	**Consumption**	**Investment**
I. ALL Countries						
Dependent variable	0.3306 **	0.5729 **	0.2741 **	0.4209 **	0.0692 **	0.1607 **
(*lagged*)	(0.017)	(0.014)	(0.017)	(0.017)	(0.022)	(0.017)
Sudden stop (SS)						
SS(t)	-0.0141	-1.2948 **	0.3950	-0.0091 *	-0.0059	-0.0712 **
	(0.597)	(0.328)	(0.571)	(0.005)	(0.007)	(0.019)
SS(t-1)	-1.2359 **	0.1752	-1.1435 **	-0.0109 **	-0.0183 **	-0.0250
	(0.607)	(0.333)	(0.578)	(0.005)	(0.007)	(0.019)
SS(t-2)	-0.0900	-0.2820	0.1275	0.0016	-0.0018	0.0550 **
	(0.626)	(0.343)	(0.596)	(0.006)	(0.008)	(0.020)
Inflow-driven sudden stop (iSS)						
iSS(t-1)	-1.5208 **	0.1922	-1.7211 **	-0.0142 **	-0.0252 **	-0.0388 *
	(0.772)	(0.422)	(0.734)	(0.007)	(0.009)	(0.024)
iSS(t-1)	0.8506	-0.9702 **	1.0619	0.0065	-0.0018	-0.0222
	(0.782)	(0.428)	(0.745)	(0.007)	(0.009)	(0.024)
iSS(t-2)	0.8392	-0.0489	0.4832	0.0061	-0.0003	-0.0705 **
	(0.800)	(0.438)	(0.761)	(0.007)	(0.010)	(0.024)
Nobs.	3100	2985	2985	3068	2137	2534
R**2	0.258	0.685	0.197	0.351	0.163	0.173
II. DEVELOPING Countries						
Dependent variable	0.3273 **	0.5582 **	0.2730 **	0.4178 **	0.0389	0.1497 **
(*lagged*)	(0.020)	(0.017)	(0.020)	(0.019)	(0.027)	(0.020)
Sudden stop (SS)						
SS(t)	0.1294	-1.6791 **	0.6735	-0.0124 *	-0.0105	-0.0972 **
	(0.790)	(0.432)	(0.759)	(0.007)	(0.011)	(0.026)
SS(t-1)	-1.7415 **	0.0289	-1.5206 **	-0.0147 **	-0.0294 **	-0.0346
	(0.808)	(0.440)	(0.772)	(0.007)	(0.011)	(0.026)
SS(t-2)	-0.0011	-0.2044	0.2430	0.0029	-0.0080	0.0714 **
	(0.843)	(0.454)	(0.798)	(0.007)	(0.011)	(0.026)
Inflow-driven sudden stop (iSS)						
iSS(t-1)	-1.7243 *	0.3720	-1.9866 **	-0.0126	-0.0269 **	-0.0241
	(1.006)	(0.548)	(0.962)	(0.009)	(0.014)	(0.031)
iSS(t-1)	1.3518	-0.8389 *	1.4975 *	0.0098	0.0046	-0.0135
	(1.024)	(0.556)	(0.979)	(0.009)	(0.014)	(0.032)
iSS(t-2)	0.8332	-0.1924	0.4362	0.0066	0.0084	-0.0824 **
	(1.055)	(0.571)	(1.004)	(0.009)	(0.014)	(0.032)
Nobs.	2272	2184	2184	2241	1375	1790
R**2	0.267	0.696	0.200	0.349	0.158	0.184

Notes: Sudden stop (SS) is a binary variable that takes the value of 1 whenever: (a) the financial account drops one standard deviation below the sample mean, and (b) the fall in the financial account exceeds 5 percent of GDP. This definition follows Guidotti, Sturzenegger and Villar (2004). Inflow-driven sudden stops (iSS) is a binary variable that takes the value of 1 whenever: (a) there are financial account reversals (as in SS), and (b) this fall is mostly explained by a decline in inflows rather than an increase in outflows. This definition follows Cowan et al. (2008). Standard errors in brackets. (**) [*] denotes significance at the (5) [10] percent level.

Table 4

Determinants of Sudden Stops: Baseline regression

Dependent variable: Sudden Stop dummy that takes the value of 1 when there is a reversal in the financial account (FA)
Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
FA Definition *1/*	**Sudden stop FA0**	**Sudden stop FA0**	**Sudden stop FA0**	**Sudden stop FA0**	**Sudden stop FA1**	**Sudden stop FA1**	**Sudden stop FA1**	**Sudden stop FA1**	**Sudden stop FA2**	**Sudden stop FA2**	**Sudden stop FA2**	**Sudden stop FA2**
Normalized by: *2/*	HP-trend Y	BP-trend Y	Moving Avg(Y)	Lagged Y	HP-trend Y	BP-trend Y	Moving Avg(Y)	Lagged Y	HP-trend Y	BP-trend Y	Moving Avg(Y)	Lagged Y
GDP growth	-3.822197**	-3.400256**	-3.509945**	-1.894003	-3.160636*	-2.795399*	-3.455335**	-1.613114	-1.381005	-0.723255	-2.331321	-1.213051
(*lagged*)	[1.672780]	[1.581320]	[1.526863]	[1.480596]	[1.690730]	[1.607185]	[1.556435]	[1.496903]	[1.535878]	[1.501151]	[1.447239]	[1.381985]
Macroeconomic framework												
Inflation	-0.459701	-0.033294	0.249116	0.432835	-0.478296	-0.044452	0.189426	0.387642	0.836973	0.718235	0.599839	0.877165
(*lagged*)	[0.772164]	[0.701588]	[0.672593]	[0.670590]	[0.784858]	[0.717231]	[0.690438]	[0.683852]	[0.670294]	[0.653405]	[0.633596]	[0.608238]
High Inflation	0.421645	-0.001541	-0.295966	-0.478264	0.442615	0.012428	-0.235418	-0.430006	-0.855022	-0.733879	-0.599916	-0.875996
(*lagged*)	[0.765011]	[0.694971]	[0.664877]	[0.662818]	[0.777924]	[0.710779]	[0.682764]	[0.676290]	[0.665385]	[0.648485]	[0.630783]	[0.605661]
Exchange rate regime	-0.253832***	-0.275641***	-0.275167***	-0.326642***	-0.263040***	-0.277043***	-0.257642***	-0.322284***	-0.180563**	-0.235001***	-0.220494***	-0.234633***
(*lagged*)	[0.082884]	[0.076005]	[0.075512]	[0.077199]	[0.085151]	[0.079016]	[0.078007]	[0.079055]	[0.077546]	[0.074620]	[0.073190]	[0.070045]
Current account (*% GDP*)	3.871623**	3.762727**	4.054381***	4.027490***	3.237894*	3.138975**	4.142291***	3.818239**	1.336182	0.870991	3.230470**	2.368751*
(*lagged*)	[1.631237]	[1.498053]	[1.476199]	[1.498593]	[1.671660]	[1.546636]	[1.520699]	[1.527479]	[1.545924]	[1.459178]	[1.450698]	[1.400954]
CG Budget surplus (*% GDP*)	0.011539	0.009716	0.012979	0.017686	0.009153	0.008663	0.008247	0.019311	0.012656	0.010732	0.012242	0.011604
(*lagged*)	[0.016774]	[0.015659]	[0.015453]	[0.015805]	[0.017172]	[0.016232]	[0.015829]	[0.016122]	[0.016220]	[0.015784]	[0.015356]	[0.014711]
Financial sector												
Private credit (*% GDP*)	0.346529*	0.324778*	0.191851	0.217016	0.33123	0.288967	0.144129	0.215845	0.057303	-0.128712	-0.175233	-0.070256
(*lagged*)	[0.194985]	[0.174998]	[0.181551]	[0.185812]	[0.202540]	[0.185758]	[0.194701]	[0.193477]	[0.195895]	[0.187925]	[0.188197]	[0.179156]
Openness												
Trade openness	0.211926	0.20239	0.242530*	0.15845	0.199071	0.184656	0.223301	0.120153	0.265702*	0.407616***	0.332790***	0.244995*
(*lagged*)	[0.147086]	[0.131286]	[0.136209]	[0.141728]	[0.155608]	[0.141598]	[0.148335]	[0.150706]	[0.138863]	[0.123264]	[0.128791]	[0.125631]
Natural resource abundance	0.000069**	0.000077***	0.000081***	0.000077***	0.000071**	0.000071***	0.000081***	0.000094***	0.000046	0.000056**	0.000044	0.000059**
(*lagged*)	[0.000027]	[0.000024]	[0.000025]	[0.000026]	[0.000029]	[0.000027]	[0.000027]	[0.000026]	[0.000030]	[0.000028]	[0.000028]	[0.000026]
Net financial inflows	11.514662***	10.391648***	10.262464***	11.271667***	11.255769***	10.129376***	10.659084***	11.525602***	7.671799***	6.315680***	8.110945***	8.215188***
(*lagged*)	[1.683985]	[1.492670]	[1.467790]	[1.559639]	[1.695201]	[1.517984]	[1.513414]	[1.587130]	[1.457843]	[1.323531]	[1.351573]	[1.327462]
External shocks												
Terms of trade shocks	-1.551115	-1.792917	-1.975086*	-0.599935	-1.497787	-1.527451	-2.017934*	-0.954859	-1.382518	-2.256069**	-2.462574**	-1.219842
(*lagged*)	[1.180732]	[1.126365]	[1.085373]	[1.042269]	[1.193473]	[1.140541]	[1.100192]	[1.051842]	[1.066548]	[1.093576]	[1.064852]	[0.998431]
World interest rate	3.373916	3.038338	4.498468	2.107685	3.563186	3.382444	4.495374	2.4327	7.492572**	6.245000*	3.268626	5.061969*
(*lagged*)	[3.472933]	[3.287565]	[3.184016]	[3.227511]	[3.538123]	[3.368996]	[3.256404]	[3.276746]	[3.276418]	[3.219932]	[3.119823]	[3.018015]
Observations	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Countries	82	82	82	82	82	82	82	82	82	82	82	82

1/ The dependent variable, Sudden stop (SS), is defined as the fall in financial account of one standard deviation below the mean and that exceeds 5 percent of GDP. We define this binary variable using different definitions: a) FA0 is the sum of net flows of foreign direct investment (FDI), foreign portfolio investment (FPI) and other investment (OI); b) FA1 adds the net flows in financial derivatives to FA0; and; c) FA2 is the sum of FA1 and net errors and omissions (to capture capital flight). 2/ We normalized the financial account balance with trend GDP as measured by: band-pass filtered trend GDP, Hodrick-Prescott filtered trend GDP, 3-year moving average GDP, and the lagged GDP.

*Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 5

Determinants of Sudden Stops: Sensitivity to Changes in the Sample of Countries

Dependent variable: Sudden Stop dummy that takes the value of 1 when there is a reversal in the financial account (FA)
Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	[1] Sudden stop All Countries	[2] Sudden stop Industrial Countries	[3] Sudden stop Developing Countries	[4] Sudden stop Middle-Income Countries	[5] Sudden stop All Countries	[6] Sudden stop Industrial Countries	[7] Sudden stop Developing Countries	[8] Sudden stop Middle-Income Countries	[9] Sudden stop All Countries	[10] Sudden stop Industrial Countries	[11] Sudden stop Developing Countries	[12] Sudden stop Middle-Income Countries
FA Definition *1/*	**FA0**	**FA0**	**FA0**	**FA0**	**FA1**	**FA1**	**FA1**	**FA1**	**FA2**	**FA2**	**FA2**	**FA2**
GDP growth	-3.822197**	-2.926604	-4.012013**	-3.896723**	-3.160636*	1.008407	-3.944089**	-3.833840**	-1.381005	1.666542	-1.813822	-2.010044
(*lagged*)	[1.672780]	[6.054658]	[1.744247]	[1.834128]	[1.690730]	[6.281025]	[1.742577]	[1.831625]	[1.535878]	[6.021341]	[1.569841]	[1.626273]
Macroeconomic framework												
Inflation	-0.459701	1.595238	-0.510651	-0.988552	-0.478296	0.372941	-0.540018	-1.029453	0.836973	-3.70697	0.787344	0.609519
(*lagged*)	[0.772164]	[3.275684]	[0.776934]	[0.815765]	[0.784858]	[3.396259]	[0.778113]	[0.817344]	[0.670294]	[3.702998]	[0.672053]	[0.682410]
High Inflation	0.421645	..	0.467104	0.933541	0.442615	..	0.49717	0.975384	-0.855022		-0.808396	-0.632298
(*lagged*)	[0.765011]		[0.767915]	[0.804657]	[0.777924]		[0.769268]	[0.806473]	[0.665385]		[0.665671]	[0.675665]
Exchange rate regime	-0.253832***	-0.144713	-0.240949***	-0.242725***	-0.263040***	-0.181718	-0.237416**	-0.238355**	-0.180563**	-0.062588	-0.178797**	-0.155847*
(*lagged*)	[0.082884]	[0.218543]	[0.092593]	[0.094190]	[0.085151]	[0.257572]	[0.092464]	[0.094023]	[0.077546]	[0.283071]	[0.085541]	[0.086478]
Current account (*% GDP*)	3.871623**	35.594296***	-0.200089	-1.778898	3.237894*	27.630163***	-0.200525	-1.802177	1.336182	5.245617	0.292538	-0.669513
(*lagged*)	[1.631237]	[5.952476]	[1.738752]	[1.857905]	[1.671660]	[5.937976]	[1.734836]	[1.858189]	[1.545924]	[5.356064]	[1.609580]	[1.680351]
CG Budget surplus (*% GDP*)	0.011539	0.025859	0.002195	-0.00169	0.009153	0.009096	0.004774	0.001012	0.012656	-0.008862	0.010948	0.012897
(*lagged*)	[0.016774]	[0.035133]	[0.019550]	[0.020714]	[0.017172]	[0.035685]	[0.019431]	[0.020731]	[0.016220]	[0.036951]	[0.017690]	[0.019515]
Financial sector												
Private credit (*% GDP*)	0.346529*	0.64136	0.700020**	0.670846**	0.33123	0.630323	0.725283**	0.693103**	0.057303	0.021891	0.467418	0.327827
(*lagged*)	[0.194985]	[0.393403]	[0.337077]	[0.327179]	[0.202540]	[0.436806]	[0.335439]	[0.326234]	[0.195895]	[0.549968]	[0.296379]	[0.303510]
Openness												
Trade openness	0.211926	0.672466	0.016579	-0.18678	0.199071	0.630783	0.006431	-0.203329	0.265702*	0.373251	0.183079	0.116968
(*lagged*)	[0.147086]	[0.514180]	[0.171654]	[0.200862]	[0.155608]	[0.653497]	[0.171348]	[0.201063]	[0.138863]	[0.770371]	[0.156337]	[0.179426]
Natural resource abundance	0.000069**	-0.000023	0.000087	0.000233***	0.000071**	-0.00001	0.000099	0.000252***	0.000046	0.000017	0.000143***	0.000290***
(*lagged*)	[0.000027]	[0.000042]	[0.000067]	[0.000085]	[0.000029]	[0.000048]	[0.000065]	[0.000084]	[0.000030]	[0.000081]	[0.000054]	[0.000073]
Net financial inflows	11.514662***	39.582219***	8.097300***	7.929226***	11.255769***	32.040069***	8.205475***	8.067503***	7.671799***	14.085213***	6.651763***	6.690233***
(*lagged*)	[1.683985]	[5.870140]	[1.645713]	[1.627779]	[1.695201]	[5.652294]	[1.652173]	[1.631806]	[1.457843]	[5.282049]	[1.475913]	[1.483442]
External shocks												
Terms of trade shocks	-1.551115	2.711813	-1.311845	-1.305965	-1.497787	3.856053	-1.521719	-1.538609	-1.382518	-7.177903	-1.187329	-1.545317
(*lagged*)	[1.180732]	[3.996409]	[1.250107]	[1.300714]	[1.193473]	[4.134423]	[1.243830]	[1.295775]	[1.066548]	[5.235283]	[1.081640]	[1.128691]
World interest rate	3.373916	12.088042	-0.043944	-1.208492	3.563186	15.607715	0.223126	-0.9582	7.492572**	27.920689***	4.749382	4.621565
(*lagged*)	[3.472933]	[9.777152]	[3.881435]	[4.044463]	[3.538123]	[10.520075]	[3.873441]	[4.040780]	[3.276418]	[10.674045]	[3.596134]	[3.730937]
Observations	1530	548	982	882	1530	548	982	882	1530	548	982	882
Countries	82	22	60	52	82	22	60	52	82	22	60	52

1/ The dependent variable, Sudden stop (SS), is defined as the fall in financial account of one standard deviation below the mean and that exceeds 5 percent of GDP. We define this binary variable using different definitions: a) FA0 is the sum of net flows of foreign direct investment (FDI), foreign portfolio investment (FPI) and other investment (OI); b) FA1 adds the net flows in financial derivatives to FA0; and; c) FA2 is the sum of FA1 and net errors and omissions (to capture capital flight). We normalized the financial account balance with trend GDP as measured by the Hodrick-Prescott filtered trend GDP.

*Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 6

Determinants of Sudden Stops: Sources of Sudden Stops

Dependent variable: Sudden Stop, Inflow-driven and Outflow-driven Sudden stops 1/

Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*				*Financial account* **FA** *1 (as % of HP trend GDP)*				*Financial account* **FA** *2 (as % of HP trend GDP)*			
Variable	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*
GDP growth	-3.822197**	-3.194174*	-1.644741	-5.282655	-3.160636*	-2.69008	-1.715502	-3.157332	-1.381005	-0.694057	-3.494	0.929711
(*lagged*)	[1.672780]	[1.762863]	[3.809370]	[3.698227]	[1.690730]	[1.782787]	[3.834352]	[3.780627]	[1.535878]	[1.810723]	[2.639110]	[2.524365]
Macroeconomic framework												
Inflation	-0.459701	-0.848292	-11.331409**	0.651832	-0.478296	-0.786433	-12.604114**	0.521112	0.836973	-0.765472	-0.448774	3.024359***
(*lagged*)	[0.772164]	[0.836200]	[5.393695]	[1.511053]	[0.784858]	[0.838727]	[5.624943]	[1.656953]	[0.670294]	[0.905018]	[1.318568]	[0.987269]
High Inflation	0.421645	0.819162	1.098147	-10.19364	0.442615	0.760724	2.400702	-10.41468	-0.855022	0.748304	0.412656	-11.951512
(*lagged*)	[0.765011]	[0.828951]	[41272.137187]	[48049.710350]	[0.777924]	[0.831817]	[39013.061820]	[88438.905427]	[0.665385]	[0.898791]	[1.309089]	[31557.821021]
Exchange rate regime	-0.253832***	-0.257330***	-0.043936	-0.205753	-0.263040***	-0.266375***	-0.07314	-0.210555	-0.180563**	-0.217270**	-0.004719	-0.130614
(*lagged*)	[0.082884]	[0.086397]	[0.186836]	[0.185304]	[0.085151]	[0.087517]	[0.189238]	[0.202405]	[0.077546]	[0.091877]	[0.123174]	[0.131730]
Current account (*% GDP*)	3.871623**	1.218952	8.100332***	0.949917	3.237894*	0.665233	8.185806***	-1.251168	1.336182	1.588266	0.743894	-1.07427
(*lagged*)	[1.631237]	[1.696649]	[2.944625]	[3.220459]	[1.671660]	[1.735483]	[2.968507]	[3.598607]	[1.545924]	[1.801921]	[2.321492]	[2.485754]
CG Budget surplus (*% GDP*)	0.011539	0.022697	-0.014444	0.000127	0.009153	0.017608	0.001812	-0.018156	0.012656	0.004404	0.018298	0.01247
(*lagged*)	[0.016774]	[0.017923]	[0.032980]	[0.036599]	[0.017172]	[0.018194]	[0.032147]	[0.039470]	[0.016220]	[0.018860]	[0.025137]	[0.026943]
Financial sector												
Private credit (*% GDP*)	0.346529*	-0.058315	0.542155*	0.094378	0.33123	-0.051215	0.480409	-0.225747	0.057303	-0.1268	0.118058	0.048281
(*lagged*)	[0.194985]	[0.213634]	[0.303364]	[0.463594]	[0.202540]	[0.222553]	[0.305286]	[0.576922]	[0.195895]	[0.230158]	[0.267119]	[0.360639]
Openness												
Trade openness	0.211926	0.157673	0.18939	-0.140507	0.199071	0.117633	0.147545	-0.138841	0.265702*	0.190319	0.226503	0.158589
(*lagged*)	[0.147086]	[0.150536]	[0.237700]	[0.413994]	[0.155608]	[0.156430]	[0.244336]	[0.466060]	[0.138863]	[0.154871]	[0.195192]	[0.241290]
Natural resource abundance	0.000069**	0.000068**	0.000029	0.00007	0.000071**	0.000082***	0.000013	0.000028	0.000046	0.000035	0.000032	-0.000001
(*lagged*)	[0.000027]	[0.000028]	[0.000040]	[0.000055]	[0.000029]	[0.000028]	[0.000042]	[0.000134]	[0.000030]	[0.000040]	[0.000035]	[0.000081]
Net financial inflows	11.514662***	8.886543***	9.282752***	8.413532***	11.255769***	8.899942***	9.199984***	7.891753***	7.671799***	7.611399***	2.253455	5.291458***
(*lagged*)	[1.683985]	[1.570418]	[2.658960]	[2.737203]	[1.695201]	[1.631622]	[2.642382]	[2.894455]	[1.457843]	[1.621137]	[1.917222]	[1.974629]
External shocks												
Terms of trade shocks	-1.551115	-1.444716	1.632193	-0.715036	-1.497787	-1.247865	0.820146	-0.49951	-1.382518	-2.096275	-1.746434	1.739161
(*lagged*)	[1.180732]	[1.322739]	[2.503504]	[2.003004]	[1.193473]	[1.333567]	[2.568505]	[2.151096]	[1.066548]	[1.369071]	[1.815621]	[1.660046]
World interest rate	3.373916	6.238503*	3.964875	-5.850187	3.563186	6.673806*	2.475066	-4.949341	7.492572**	6.18312	3.397304	10.506088*
(*lagged*)	[3.472933]	[3.727968]	[7.620485]	[7.644508]	[3.538123]	[3.776364]	[7.648369]	[8.148504]	[3.276418]	[3.937753]	[5.350265]	[5.479747]
Observations	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Countries	82	82	82	82	82	82	82	82	82	82	82	82

*1/ The dependent variable, Sudden stop (SS), is defined as the fall in financial account of 1 standard deviation below the mean and that exceeds 5 percent of GDP. We define this binary variable using different definitions: a) FA0 is the sum of net flows of foreign direct investment (FDI), foreign portfolio investment (PI) and other investment (OI); b) FA1 adds the net flows in financial derivatives to FA0; and; c) FA2 is the sum of FA1 and net errors and omissions (to capture capital flight). We normalized the financial account balance with trend GDP as measured by the Hodrick-Prescott filtered trend GDP. On the other hand, we use the criteria established by Cowan, De Gregorio, Micco and Neilson (2008) to identify inflow-driven sudden stops, outflow-driven sudden stops, and mixed cases. Their criteria relies on the contribution of inflows to the reversal in the financial account. If the fall in the financial account is mostly explained by the decline in inflows (ratio of changes in gross inflows to the change in financial account greater than 0.75), we classify this event as an inflow-driven sudden stop. If mostly explained by an increase in outflows (ratio lower than 0.25), then we denote this episode as an outflow-driven sudden stop. The rest of the episode (ratio between 0.25 and 0.75) are considered as mixed cases. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 7

Determinants of Sudden Stops: Sources of Sudden Stops, Regression analysis by sample of countries

Dependent variable: Sudden Stop, Inflow-driven and Outflow-driven Sudden stops 1/

Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*											
	INDUSTRIAL Countries				*DEVELOPING Countries*				*MIDDLE-INCOME Countries*			
Variable	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*
GDP growth	-2.926604	-15.782319**	6.693452	1.908564	-4.012013**	-3.060357	-3.108618	-6.157209	-3.896723**	-3.182395	-0.492842	-6.322071
(*lagged*)	[6.054658]	[7.924089]	[8.214795]	[13.983529]	[1.744247]	[1.885103]	[5.593229]	[5.162178]	[1.834128]	[1.965641]	[5.083410]	[5.437621]
Macroeconomic framework												
Inflation	1.595238	0.05736	-8.78084	7.074362	-0.510651	-0.828043	-13.389453	0.084801	-0.988552	-1.32877	-15.868039	0.010565
(*lagged*)	[3.275684]	[4.485250]	[8.916256]	[5.547148]	[0.776934]	[0.873645]	[8.407456]	[2.398182]	[0.815765]	[0.925318]	[10.529196]	[2.581867]
High Inflation	..	..	..	..	0.467104	0.79709	3.450151	-14.216067	0.933541	1.283931	5.631571	-11.467439
(*lagged*)					[0.767915]	[0.866316]	[4.91209e+05]	[1.61062e+07]	[0.804657]	[0.916014]	[1.08343e+06]	[1.44012e+05]
Exchange rate regime	-0.144713	-0.331968	-0.068444	-1.109020*	-0.240949***	-0.233980**	-0.009915	-0.279358	-0.242725***	-0.232759**	0.105463	-0.294729
(*lagged*)	[0.218543]	[0.296392]	[0.301357]	[0.586520]	[0.092593]	[0.099658]	[0.359652]	[0.282835]	[0.094190]	[0.101362]	[0.412856]	[0.326088]
Current account (*% GDP*)	35.594296***	33.276584***	27.248654***	19.928303*	-0.200089	-1.970911	1.923452	-1.029919	-1.778898	-2.5972	-0.152715	-4.162447
(*lagged*)	[5.952476]	[8.037471]	[7.498700]	[11.768342]	[1.738752]	[1.880730]	[4.053546]	[4.832068]	[1.857905]	[1.976828]	[4.468617]	[5.514127]
CG Budget surplus (*% GDP*)	0.025859	0.069108	-0.072513	0.132165	0.002195	0.005436	0.02869	-0.073974	-0.00169	0.001832	0.05163	-0.068966
(*lagged*)	[0.035133]	[0.043363]	[0.050863]	[0.092286]	[0.019550]	[0.021517]	[0.046698]	[0.068332]	[0.020714]	[0.022410]	[0.074423]	[0.068966]
Financial sector												
Private credit (*% GDP*)	0.64136	-0.263706	0.922009*	0.064879	0.700020**	0.707384**	0.013453	0.437862	0.670846**	0.685601*	-0.207976	0.739604
(*lagged*)	[0.393403]	[0.538192]	[0.507109]	[0.942263]	[0.337077]	[0.338380]	[0.714458]	[1.143199]	[0.327179]	[0.355069]	[0.790810]	[1.116683]
Openness												
Trade openness	0.672466	0.571517	0.524546	-1.669107	0.016579	-0.137178	0.589613	-0.463828	-0.18678	-0.286235	0.662829	-0.415013
(*lagged*)	[0.514180]	[0.532601]	[0.599760]	[1.428378]	[0.171654]	[0.188248]	[0.442145]	[0.755723]	[0.200862]	[0.216391]	[0.619244]	[0.795279]
Natural resource abundance	-0.000023	-0.000036	0.00001	0.000098	0.000087	0.000061	0.000101	-0.000026	0.000233***	0.00013	0.000319	0.000187
(*lagged*)	[0.000042]	[0.000054]	[0.000057]	[0.000090]	[0.000067]	[0.000080]	[0.000126]	[0.000294]	[0.000085]	[0.000099]	[0.000208]	[0.000341]
Net financial inflows	39.582219***	40.374054***	26.981621***	38.148714**	8.097300***	6.562873***	6.694392**	9.489082**	7.929226***	6.400758***	6.206141**	6.999952
(*lagged*)	[5.870140]	[8.030862]	[7.179706]	[14.877058]	[1.645713]	[1.604435]	[2.985289]	[4.131043]	[1.627779]	[1.651017]	[3.162859]	[4.285567]
External shocks												
Terms of trade shocks	2.711813	8.154338	4.128197	-9.953399	-1.311845	-1.244817	-0.067126	0.731562	-1.305965	-1.067088	-2.420546	0.219333
(*lagged*)	[3.996409]	[5.078790]	[5.084672]	[8.013208]	[1.250107]	[1.410945]	[3.830651]	[2.595744]	[1.300714]	[1.476864]	[4.537519]	[2.676986]
World interest rate	12.088042	20.538534	7.969904	-14.20535	-0.043944	2.78418	-7.564941	-11.198058	-1.208492	1.346912	-5.454146	-12.102519
(*lagged*)	[9.777152]	[13.061926]	[13.856077]	[19.816450]	[3.881435]	[4.201047]	[12.426608]	[11.700625]	[4.044463]	[4.324431]	[14.363353]	[12.573286]
Observations	548	548	548	548	982	982	982	982	882	882	882	882
Countries	22	22	22	22	60	60	60	60	52	52	52	52

*1/ See footnote in Table 6. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 8

Determinants of Sudden Stops: Sources of Sudden Stops, Different Financial Sector Indicators

Dependent variable: Sudden Stop, Inflow-driven and Outflow-driven Sudden stops 1/

Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*											
	Financial account reversal				*Inflow-driven suddens stops*				*Outflow-driven suddens stops*			
Variable	**[1]**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**[8]**	**[9]**	**[10]**	**[11]**	**[12]**
GDP growth	-3.822197**	-3.878204**	-3.795488**	-3.846455**	-3.194174*	-3.119650*	-3.284323*	-3.147281*	-1.644741	-2.120711	-2.532079	-1.975272
(*lagged*)	[1.672780]	[1.669261]	[1.539088]	[1.662599]	[1.762863]	[1.760322]	[1.681084]	[1.755789]	[3.809370]	[3.828299]	[3.457496]	[3.822104]
Macroeconomic framework												
Inflation	-0.459701	-0.471035	-0.63796	-0.462277	-0.848292	-0.727432	-0.599413	-0.800122	-11.331409**	-12.083432**	-8.520610**	-11.956255**
(*lagged*)	[0.772164]	[0.762304]	[0.736536]	[0.772114]	[0.836200]	[0.822233]	[0.793121]	[0.832482]	[5.393695]	[5.398732]	[4.031231]	[5.421610]
High Inflation	0.421645	0.428791	0.543597	0.419362	0.819162	0.697738	0.552649	0.767697	1.098147	1.031968	-1.673449	1.452318
(*lagged*)	[0.765011]	[0.754310]	[0.723731]	[0.763306]	[0.828951]	[0.814600]	[0.785173]	[0.823774]	[41272.137187]	[72027.480458]	[29290.332769]	[46346.479757]
Exchange rate regime	-0.253832***	-0.272688***	-0.241293***	-0.249421***	-0.257330***	-0.255999***	-0.247052***	-0.251168***	-0.043936	-0.041581	-0.048995	-0.024192
(*lagged*)	[0.082884]	[0.085397]	[0.081380]	[0.083103]	[0.086397]	[0.087923]	[0.085253]	[0.086443]	[0.186836]	[0.205703]	[0.194657]	[0.192410]
Current account (*% GDP*)	3.871623**	3.433361**	4.426292***	3.749514**	1.218952	1.064151	1.638805	1.185104	8.100332***	7.925693***	9.967373***	8.060058***
(*lagged*)	[1.631237]	[1.662196]	[1.540351]	[1.636568]	[1.696649]	[1.750600]	[1.627318]	[1.718401]	[2.944625]	[3.036681]	[2.979832]	[2.990620]
CG Budget surplus (*% GDP*)	0.011539	0.016081	0.008859	0.013505	0.022697	0.021892	0.012545	0.021899	-0.014444	-0.01026	-0.017012	-0.012107
(*lagged*)	[0.016774]	[0.016660]	[0.017005]	[0.016612]	[0.017923]	[0.017897]	[0.018659]	[0.017883]	[0.032980]	[0.033147]	[0.033302]	[0.033025]
Financial sector												
Bank credit (*% GDP*)	0.346529*	..	..	..	-0.058315	..	..	..	0.542155*	..	..	..
(*lagged*)	[0.194985]				[0.213634]				[0.303364]			
Bank Deposit (*% GDP*)	..	0.510858**	..	..	..	0.055061	..	..	..	0.35136	..	..
(*lagged*)		[0.243343]				[0.264559]				[0.381842]		
Credit-Deposit ratio	..	..	0.238419	..	..	..	0.231667	..	..	..	0.261327	..
(*lagged*)			[0.154119]				[0.162165]				[0.305888]	
Bank Assets (*% GDP*)	..	..	..	0.293961	..	..	..	-0.027704	..	..	..	0.346442
(*lagged*)				[0.182501]				[0.199322]				[0.287240]
Openness												
Trade openness	0.211926	0.166607	0.298056**	0.231372	0.157673	0.151525	0.175718	0.16504	0.18939	0.193205	0.337803	0.242843
(*lagged*)	[0.147086]	[0.153370]	[0.140122]	[0.146751]	[0.150536]	[0.156247]	[0.145191]	[0.151452]	[0.237700]	[0.266269]	[0.244191]	[0.241390]
Natural resource abundance	0.000069**	0.000075***	0.000059**	0.000070**	0.000068**	0.000070**	0.000070**	0.000068**	0.000029	0.000025	0.000008	0.000025
(*lagged*)	[0.000027]	[0.000028]	[0.000027]	[0.000028]	[0.000028]	[0.000029]	[0.000028]	[0.000028]	[0.000040]	[0.000044]	[0.000045]	[0.000042]
Net financial inflows	11.514662***	11.658705***	10.957957***	11.498343***	8.886543***	8.896395***	9.198420***	8.862203***	9.282752***	9.250452***	9.852607***	9.285074***
(*lagged*)	[1.683985]	[1.702213]	[1.588013]	[1.687234]	[1.570418]	[1.624820]	[1.570128]	[1.617398]	[2.658960]	[2.685699]	[2.642884]	[2.677457]
External shocks												
Terms of trade shocks	-1.551115	-1.470102	-1.643611	-1.551661	-1.444716	-1.379246	-1.593991	-1.423239	1.632193	1.385114	0.903629	1.447743
(*lagged*)	[1.180732]	[1.183901]	[1.108233]	[1.178684]	[1.322739]	[1.338228]	[1.278726]	[1.329612]	[2.503504]	[2.533876]	[2.411682]	[2.519346]
World interest rate	3.373916	3.136222	3.396751	3.060948	6.238503*	5.996523	6.290909*	6.02846	3.964875	3.646947	-1.542228	3.340055
(*lagged*)	[3.472933]	[3.480026]	[3.351379]	[3.463781]	[3.727968]	[3.735214]	[3.681500]	[3.723737]	[7.620485]	[7.626306]	[7.394926]	[7.614338]
Observations	1530	1540	1612	1540	1530	1540	1612	1540	1530	1540	1612	1540
Countries	82	82	88	82	82	82	88	82	82	82	88	82

*1/ See footnote in Table 4. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 9

Determinants of Sudden Stops: Sources of Sudden Stops, Different indicators of financial openness

Dependent variable: Sudden Stop, Inflow-driven and Outflow-driven Sudden stops 1/

Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*											
	Financial account reversal				*Inflow-driven suddens stops*				*Outflow-driven suddens stops*			
Variable	**[1]**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**[8]**	**[9]**	**[10]**	**[11]**	**[12]**
GDP growth	-3.822197**	-4.002587**	-3.773758**	-3.830103**	-3.194174*	-3.222182*	-3.194473*	-3.394339*	-1.644741	-1.839749	-1.695299	-1.408237
(*lagged*)	[1.672780]	[1.680366]	[1.668203]	[1.675193]	[1.762863]	[1.781552]	[1.765111]	[1.798722]	[3.809370]	[3.808447]	[3.827335]	[3.896488]
Macroeconomic framework												
Inflation	-0.459701	-0.560626	-0.458387	-0.495944	-0.848292	-0.897189	-0.861939	-0.995603	-11.331409**	-11.674114**	-11.231172**	-11.897072**
(*lagged*)	[0.772164]	[0.775992]	[0.770634]	[0.772863]	[0.836200]	[0.839412]	[0.837962]	[0.848323]	[5.393695]	[5.604101]	[5.377374]	[5.812001]
High Inflation	0.421645	0.524113	0.419995	0.457248	0.819162	0.870189	0.831453	0.965119	1.098147	1.664633	1.006172	0.899783
(*lagged*)	[0.765011]	[0.768750]	[0.763508]	[0.765676]	[0.828951]	[0.832372]	[0.830695]	[0.840925]	[41272.137187]	[25577.692380]	[41325.153094]	[68879.734026]
Exchange rate regime	-0.253832***	-0.248941***	-0.251977***	-0.248041***	-0.257330***	-0.259115***	-0.252798***	-0.246940***	-0.043936	-0.048536	-0.042993	-0.064665
(*lagged*)	[0.082884]	[0.082716]	[0.082962]	[0.083058]	[0.086397]	[0.086715]	[0.086918]	[0.087625]	[0.186836]	[0.190025]	[0.186744]	[0.202256]
Current account (*% GDP*)	3.871623**	4.027623**	3.663352**	3.687443**	1.218952	1.235835	0.983002	0.888147	8.100332***	8.310991***	8.031269***	8.688131***
(*lagged*)	[1.631237]	[1.635011]	[1.629664]	[1.635340]	[1.696649]	[1.719629]	[1.703955]	[1.752256]	[2.944625]	[3.048170]	[2.940996]	[3.184270]
CG Budget surplus (*% GDP*)	0.011539	0.010972	0.011117	0.010899	0.022697	0.024719	0.021436	0.022583	-0.014444	-0.02061	-0.014534	-0.017338
(*lagged*)	[0.016774]	[0.016684]	[0.016837]	[0.016836]	[0.017923]	[0.018084]	[0.018063]	[0.018232]	[0.032980]	[0.033462]	[0.033063]	[0.034669]
Financial sector												
Bank credit (*% GDP*)	0.346529*	0.282835	0.341065*	0.30599	-0.058315	-0.12657	-0.054601	-0.189874	0.542155*	0.570376*	0.537963*	0.641375*
(*lagged*)	[0.194985]	[0.199199]	[0.195258]	[0.199334]	[0.213634]	[0.220127]	[0.219778]	[0.233648]	[0.303364]	[0.318174]	[0.303523]	[0.335466]
Openness												
Trade openness	0.211926	0.208997	0.195755	0.208698	0.157673	0.208619	0.117902	0.132878	0.18939	0.100597	0.183071	0.130442
(*lagged*)	[0.147086]	[0.149369]	[0.152736]	[0.153220]	[0.150536]	[0.154517]	[0.162019]	[0.164360]	[0.237700]	[0.255136]	[0.244710]	[0.270853]
Natural resource abundance	0.000069**	0.000061**	0.000069**	0.000071***	0.000068**	0.000068**	0.000070**	0.000076***	0.000029	0.000027	0.000029	0.000029
(*lagged*)	[0.000027]	[0.000027]	[0.000027]	[0.000027]	[0.000028]	[0.000028]	[0.000029]	[0.000028]	[0.000040]	[0.000041]	[0.000040]	[0.000044]
Net financial inflows	11.514662***	..	..	..	8.886543***	..	..	..	9.282752***	..	..	..
(*lagged*)	[1.683985]				[1.570418]				[2.658960]			
Net equity flows	..	..	11.524384***	..	..	..	9.320573***	..	..	..	9.312854***	..
(*lagged*)			[1.834615]				[1.844437]				[2.895226]	
Net FDI flows	..	10.486533***	..	10.591698***	..	7.011741***	..	6.939068***	..	11.772510***	..	13.002860***
(*lagged*)		[2.133588]		[2.109449]		[2.103158]		[2.138176]		[4.020656]		[4.418123]
Net FPI flows	..	10.009018***	..	..	..	9.552173***	..	..	..	7.537813**	..	..
(*lagged*)		[2.020698]				[2.169330]				[3.156474]		
Net FPI equity flows	..	..	..	12.556559***	..	..	..	12.430677***	..	..	..	7.553050**
(*lagged*)				[2.192659]				[2.385558]				[3.358189]
Net debt flows	..	..	11.139306***	11.493845***	..	..	8.412658***	9.671462***	..	..	9.158622***	9.347567***
(*lagged*)			[1.709713]	[1.761110]			[1.615578]	[1.773579]			[2.726035]	[2.951230]
Net other investment flows	..	12.781019***	..	..	..	9.802556***	..	..	..	9.401370***	..	..
(*lagged*)		[1.878481]				[1.807140]				[2.803307]		
External shocks												
Terms of trade shocks	-1.551115	-1.544087	-1.508421	-1.487243	-1.444716	-1.455869	-1.375371	-1.321922	1.632193	1.359779	1.60261	1.334859
(*lagged*)	[1.180732]	[1.181331]	[1.176629]	[1.178242]	[1.322739]	[1.334715]	[1.319821]	[1.337177]	[2.503504]	[2.516365]	[2.521302]	[2.654665]
World interest rate	3.373916	3.118711	3.217121	3.06843	6.238503*	6.073842	6.084214	5.756155	3.964875	4.439255	3.767176	4.758251
(*lagged*)	[3.472933]	[3.467676]	[3.466712]	[3.468259]	[3.727968]	[3.738240]	[3.733006]	[3.752432]	[7.620485]	[7.738922]	[7.645273]	[8.103443]
Observations	1530	1540	1612	1540	1530	1540	1612	1540	1530	1540	1612	1540
Countries	82	82	88	82	82	82	88	82	82	82	88	82

*1/ See footnote in Table 4. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 10

Determinants of Sudden Stops: Sources of Sudden Stops, Different indicators of financial openness

Dependent variable: Sudden Stop, Inflow-driven and Outflow-driven Sudden stops 1/

Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*											
	Financial account reversal				*Inflow-driven suddens stops*				*Outflow-driven suddens stops*			
Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
GDP growth	-3.970180**	-4.090172**	-3.842003**	-3.860769**	-3.365937*	-3.335608*	-3.216815*	-3.345364*	-1.79201	-1.847455	-1.829933	-1.691793
(*lagged*)	[1.686998]	[1.688720]	[1.681264]	[1.680176]	[1.795518]	[1.808287]	[1.789627]	[1.804638]	[3.858700]	[3.862229]	[3.877600]	[3.923631]
Macroeconomic framework												
Inflation	-0.469764	-0.54959	-0.463871	-0.505114	-0.887493	-0.920912	-0.875455	-0.973046	-11.326328**	-11.614023**	-11.317281**	-11.721408**
(*lagged*)	[0.775117]	[0.776110]	[0.772202]	[0.773153]	[0.849474]	[0.847091]	[0.843053]	[0.847752]	[5.366589]	[5.637534]	[5.434857]	[5.731827]
High Inflation	0.432823	0.513244	0.426398	0.466083	0.85977	0.894722	0.847098	0.942794	1.091753	1.291291	1.085167	1.658601
(*lagged*)	[0.768070]	[0.768884]	[0.765173]	[0.765899]	[0.842488]	[0.840119]	[0.836028]	[0.840360]	[43546.870814]	[44395.566551]	[43599.167888]	[25679.417136]
Exchange rate regime	-0.241928***	-0.238061***	-0.242927***	-0.240696***	-0.242619***	-0.246822***	-0.246946***	-0.247655***	-0.03722	-0.044123	-0.036346	-0.04422
(*lagged*)	[0.083643]	[0.083166]	[0.083303]	[0.083051]	[0.088181]	[0.087812]	[0.087693]	[0.087849]	[0.187161]	[0.191260]	[0.187423]	[0.194420]
Current account (*% GDP*)	3.843852**	3.899694**	3.542973**	3.597977**	1.053663	1.004837	0.742489	0.699782	8.116018***	8.293298***	8.060956***	8.726345***
(*lagged*)	[1.641565]	[1.644966]	[1.645677]	[1.644534]	[1.738837]	[1.755873]	[1.739979]	[1.766843]	[2.930932]	[3.032080]	[2.935680]	[3.074651]
CG Budget surplus (*% GDP*)	0.009029	0.007932	0.008393	0.007413	0.019828	0.021093	0.018915	0.020449	-0.015525	-0.021017	-0.015044	-0.022629
(*lagged*)	[0.016946]	[0.016871]	[0.016979]	[0.016978]	[0.018258]	[0.018388]	[0.018294]	[0.018454]	[0.033119]	[0.033669]	[0.033274]	[0.034426]
Financial sector												
Bank credit (*% GDP*)	0.299564	0.22667	0.272343	0.248705	-0.135074	-0.209151	-0.151928	-0.213791	0.527390*	0.559602*	0.520722*	0.560612*
(*lagged*)	[0.199120]	[0.203319]	[0.201689]	[0.202587]	[0.226722]	[0.233983]	[0.229387]	[0.236125]	[0.306461]	[0.325443]	[0.311093]	[0.327160]
Openness												
Trade openness	0.17809	0.139479	0.146724	0.152332	0.091263	0.120848	0.073533	0.093248	0.183121	0.097453	0.188286	0.101599
(*lagged*)	[0.151449]	[0.156890]	[0.156942]	[0.157627]	[0.162540]	[0.166603]	[0.166972]	[0.169089]	[0.236648]	[0.271868]	[0.256388]	[0.270293]
Natural resource abundance	0.000069**	0.000064**	0.000071***	0.000071***	0.000070**	0.000072**	0.000073**	0.000079***	0.000029	0.000027	0.000028	0.000026
(*lagged*)	[0.000027]	[0.000027]	[0.000027]	[0.000027]	[0.000028]	[0.000028]	[0.000028]	[0.000029]	[0.000039]	[0.000041]	[0.000040]	[0.000042]
Gross outflows	11.329698***	..	..	..	8.735955***	..	..	..	9.179143***	..	..	..
(*lagged*)	[1.686451]				[1.631931]				[2.673676]			
Gross equity outflows	..	..	10.086316***	..	..	..	7.606580***	..	..	..	9.191521***	..
(*lagged*)			[1.973400]				[2.001198]				[3.317005]	
Gross debt outflows	..	..	11.485048***	11.914856***	..	..	8.860410***	10.005549***	..	..	9.083312***	9.339383***
(*lagged*)			[1.730953]	[1.809336]			[1.673739]	[1.851561]			[2.732048]	[2.900712]
Gross FDI outflows	..	9.338138***	..	10.792394***	..	6.201647**	..	6.356720**	..	11.747024***	..	13.715145***
(*lagged*)		[2.337109]		[2.428060]		[2.412595]		[2.473204]		[4.431450]		[4.591920]
Gross FPI outflows	..	9.727862***	..	..	..	9.270331***	..	..	..	7.450211**	..	..
(*lagged*)		[2.012027]				[2.150312]				[3.189495]		
Gross FPI equity outflows	..	..	..	7.918636**	..	..	..	10.041697**	..	..	..	2.764742
(*lagged*)				[3.626790]				[4.293133]				[5.289132]
Gross OI outflows	..	12.954606***	..	..	..	9.765638***	..	..	..	9.380743***	..	..
(*lagged*)		[1.933060]				[1.965538]				[2.871934]		
Gross inflows	11.712309***	..	..	..	9.325910***	..	..	..	9.289459***	..	..	..
(*lagged*)	[1.700817]				[1.666407]				[2.645657]			
Gross equity inflows	..	..	11.380685***	..	..	..	9.010978***	..	..	..	9.208018***	..
(*lagged*)			[1.849099]				[1.884961]				[2.919654]	
Gross debt inflows	..	..	11.474284***	11.651051***	..	..	9.023299***	9.695402***	..	..	9.233229***	9.535337***
(*lagged*)			[1.753009]	[1.766293]			[1.709786]	[1.776768]			[2.733165]	[2.888510]
Gross FDI inflows	..	10.924021***	..	10.746239***	..	7.651995***	..	7.249101***	..	11.563626***	..	12.009471***
(*lagged*)		[2.141011]		[2.112148]		[2.172968]		[2.159214]		[4.149008]		[4.242053]
Gross FPI inflows	..	10.079745***	..	..	..	9.701624***	..	..	..	7.679339**	..	..
(*lagged*)		[2.081621]				[2.223364]				[3.244830]		
Gross FPI equity inflows	..	..	..	11.519747***	..	..	..	11.851528***	..	..	..	6.400499*
(*lagged*)				[2.357766]				[2.716586]				[3.417874]
Gross OI inflows	..	12.812710***	..	..	..	10.134382***	..	..	..	9.298664***	..	..
(*lagged*)		[1.888662]				[1.880558]				[2.834728]		
External shocks												
Terms of trade shocks	-1.519387	-1.474627	-1.422615	-1.38627	-1.400055	-1.396733	-1.308687	-1.258783	1.65399	1.353914	1.63995	1.584755
(*lagged*)	[1.184570]	[1.184011]	[1.182109]	[1.180074]	[1.343650]	[1.350490]	[1.337435]	[1.342894]	[2.488900]	[2.504355]	[2.519881]	[2.551032]
World interest rate	3.489663	3.029092	3.15839	2.99325	6.452192*	6.228604	6.148262	5.685054	4.057373	4.297405	4.016776	5.074259
(*lagged*)	[3.491326]	[3.483434]	[3.490466]	[3.488304]	[3.787220]	[3.789551]	[3.774827]	[3.780695]	[7.603531]	[7.766554]	[7.732130]	[8.027299]
Observations	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Countries	82	82	82	82	82	82	82	82	82	82	82	82

*1/ See footnote in Table 4. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 11

Determinants of Sudden Stops, Net and By Sources: Exchange rate regimes as buffers?

Dependent variable: Sudden Stop dummy that takes the value of 1 when there is a reversal in the financial account (FA) 1/
Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*				*Financial account* **FA** *1 (as % of HP trend GDP)*				*Financial account* **FA** *2 (as % of HP trend GDP)*			
Variable	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*
GDP growth	-3.944083**	-3.219383*	-1.479474	-5.803859	-3.277871*	-2.710865	-1.56544	-3.731247	-1.354607	-0.603149	-3.332134	0.915896
(*lagged*)	[1.680243]	[1.775127]	[3.860220]	[3.602909]	[1.699679]	[1.792079]	[3.912062]	[3.748689]	[1.534391]	[1.813485]	[2.655626]	[2.528813]
Macroeconomic framework												
Inflation	-0.524547	-0.915901	-11.525410**	0.616469	-0.556042	-0.841462	-13.012775**	0.447506	0.921495	-0.686331	-0.412887	3.140592***
(*lagged*)	[0.779407]	[0.845539]	[5.461602]	[1.480236]	[0.793581]	[0.847442]	[5.747777]	[1.633054]	[0.674361]	[0.908998]	[1.312218]	[1.002497]
High Inflation	0.483439	0.885521	1.607508	-9.758193	0.5173	0.814796	2.584895	-9.701151	-0.9396	0.671496	0.369072	-12.433615
(*lagged*)	[0.771752]	[0.838071]	[24594.875751]	[47904.413974]	[0.786114]	[0.840277]	[39407.343668]	[51934.591050]	[0.669424]	[0.902988]	[1.301415]	[38083.447772]
Exchange rate regime	-0.331589**	-0.330033**	-0.193518	-0.228117	-0.351642**	-0.325649**	-0.28654	-0.270038	-0.079287	-0.097416	-0.074216	0.040264
XRR (*lagged*)	[0.138540]	[0.153196]	[0.295690]	[0.263411]	[0.142330]	[0.155653]	[0.298098]	[0.295628]	[0.136260]	[0.165728]	[0.213898]	[0.235251]
Current account (*% GDP*)	3.784615**	1.174912	7.981150***	0.344757	3.150072*	0.629295	8.164124***	-1.788978	1.369893	1.680376	0.448477	-0.971074
(*lagged*)	[1.638699]	[1.707063]	[2.980339]	[3.204629]	[1.679496]	[1.739856]	[3.019558]	[3.546863]	[1.552371]	[1.808609]	[2.324623]	[2.526445]
CG Budget surplus (*% GDP*)	0.011607	0.022476	-0.01403	0.002167	0.009059	0.017426	0.001361	-0.015685	0.01247	0.004064	0.018051	0.012954
(*lagged*)	[0.016760]	[0.017966]	[0.033035]	[0.035871]	[0.017172]	[0.018211]	[0.032407]	[0.038789]	[0.016239]	[0.018967]	[0.025153]	[0.027425]
Financial sector												
Private credit (*% GDP*)	0.341178*	-0.076241	0.532788*	0.141715	0.322759	-0.065721	0.4557	-0.182085	0.083838	-0.102956	0.131425	0.075706
(*lagged*)	[0.196470]	[0.219942]	[0.310717]	[0.444601]	[0.204221]	[0.224657]	[0.314819]	[0.554243]	[0.196227]	[0.231640]	[0.269795]	[0.364418]
Openness												
Trade openness	0.216452	0.16166	0.187028	-0.081717	0.20477	0.121527	0.143527	-0.085517	0.268225*	0.187085	0.231731	0.153055
(*lagged*)	[0.147836]	[0.152482]	[0.241456]	[0.390090]	[0.156531]	[0.157185]	[0.249479]	[0.440536]	[0.138296]	[0.154847]	[0.195145]	[0.244590]
Natural resource abundance	0.000073***	0.000066**	0.000031	0.000074	0.000075**	0.000080***	0.000013	0.000011	0.000048	0.000034	0.000041	0.000002
(*lagged*)	[0.000028]	[0.000029]	[0.000042]	[0.000058]	[0.000030]	[0.000029]	[0.000044]	[0.000135]	[0.000030]	[0.000040]	[0.000036]	[0.000079]
Net financial inflows	11.513456***	8.892816***	9.299308***	7.972332***	11.255068***	8.903173***	9.343336***	7.452961***	7.711340***	7.680260***	2.227546	5.399529***
(*lagged*)	[1.684216]	[1.616451]	[2.689405]	[2.581304]	[1.696325]	[1.631448]	[2.698416]	[2.716128]	[1.463769]	[1.630255]	[1.886817]	[2.007175]
External shocks												
Terms of trade shocks	-0.632956	-2.506021	2.296093	3.635393	-0.813809	-2.168825	0.250653	3.94748	0.304192	-2.0435	1.108825	2.522203
Dlpx (*lagged*)	[2.208142]	[2.417486]	[5.539792]	[3.470114]	[2.221101]	[2.415657]	[6.327995]	[3.771399]	[1.962394]	[2.774447]	[3.114885]	[3.108702]
World interest rate	-1.446455	1.529792	-8.85103	-9.175427	-1.978979	2.852097	-15.44755	-10.32445	14.274905*	13.413967	-0.589064	20.687321
Wir (*lagged*)	[8.075521]	[8.552367]	[20.020011]	[17.197232]	[8.229447]	[8.651747]	[20.268709]	[18.389002]	[7.863236]	[9.469598]	[13.344639]	[13.058592]
Dlpx * XRR	-0.604492	0.676799	-0.358463	-2.579267	-0.464507	0.594023	0.370838	-2.654888	-1.040095	0.013988	-1.784663	-0.474708
(*lagged*)	[1.167837]	[1.350030]	[2.886429]	[1.786682]	[1.178791]	[1.355656]	[3.192592]	[1.924842]	[1.059488]	[1.422263]	[1.628254]	[1.750402]
Wir * XRR	2.926723	2.814845	7.134454	1.763524	3.365566	2.282238	10.077143	3.072106	-3.925452	-4.347913	2.090342	-5.947968
(*lagged*)	[4.360237]	[4.661024]	[10.250066]	[9.090254]	[4.465385]	[4.715665]	[10.417465]	[9.992610]	[4.159010]	[5.135230]	[6.605951]	[6.910729]
Observations	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Countries	82	82	82	82	82	82	82	82	82	82	82	82

*1/ See footnote in Table 6. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 12

Determinants of Sudden Stops, Net and By Sources: Does dollarization amplifies external shocks?

Dependent variable: Sudden Stop dummy that takes the value of 1 when there is a reversal in the financial account (FA) 1/

Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*				*Financial account* **FA** *1 (as % of HP trend GDP)*				*Financial account* **FA** *2 (as % of HP trend GDP)*			
Variable	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*
GDP growth	-4.105463**	-3.098136*	-2.294082	-7.302590*	-3.683957**	-2.83525	-2.722617	-4.724446	-0.669054	-0.574323	-2.501964	1.018801
(*lagged*)	[1.773547]	[1.843837]	[4.539607]	[4.222450]	[1.768613]	[1.845900]	[4.513304]	[4.048172]	[1.547995]	[1.859969]	[2.832084]	[2.582716]
Macroeconomic framework												
Inflation	-0.640466	-0.862353	-10.272139*	-0.467507	-0.701103	-0.808787	-11.817529**	-0.833857	0.718703	-0.790644	-0.945554	2.742643***
(*lagged*)	[0.814467]	[0.863369]	[5.462215]	[1.861907]	[0.815040]	[0.858940]	[5.731883]	[1.945559]	[0.674239]	[0.924916]	[1.482871]	[1.025303]
High Inflation	0.620477	0.844494	-1.807571	-9.678983	0.679122	0.79211	-1.076854	-9.572362	-0.728326	0.780248	0.917806	-14.246057
(*lagged*)	[0.808021]	[0.857093]	[50404.126231]	[41029.729101]	[0.808179]	[0.853017]	[81414.593816]	[36978.274675]	[0.669619]	[0.919889]	[1.473285]	[1.05565e+06]
Exchange rate regime	-0.223917**	-0.215053**	0.123998	-0.295815	-0.242362***	-0.220157**	0.065373	-0.37875	-0.155664*	-0.198942**	0.170289	-0.139331
XRR (*lagged*)	[0.090698]	[0.092347]	[0.232146]	[0.234525]	[0.090736]	[0.092443]	[0.228518]	[0.242146]	[0.079449]	[0.097752]	[0.148989]	[0.136585]
Current account (*% GDP*)	3.527302**	1.356447	7.538613**	0.401589	3.087831*	0.993741	7.753444**	-1.115287	2.109646	2.248384	2.338981	-1.093942
(*lagged*)	[1.794442]	[1.850067]	[3.466887]	[3.554689]	[1.799281]	[1.854106]	[3.476629]	[3.822549]	[1.608888]	[1.931908]	[2.566095]	[2.558091]
CG Budget surplus (*% GDP*)	0.008693	0.024185	-0.041216	0.016364	0.00896	0.021491	-0.016418	-0.004334	0.013181	0.011185	0.013298	0.00834
(*lagged*)	[0.018652]	[0.019520]	[0.039674]	[0.044896]	[0.018679]	[0.019558]	[0.037354]	[0.046514]	[0.016810]	[0.020445]	[0.027733]	[0.028368]
Financial sector												
Private credit (*% GDP*)	0.509362**	0.105453	0.563011	0.049667	0.486480**	0.102508	0.447924	-0.171339	0.161371	0.05848	0.047924	0.114496
(*lagged*)	[0.224271]	[0.242853]	[0.382094]	[0.592535]	[0.222933]	[0.242888]	[0.372784]	[0.663485]	[0.204352]	[0.244169]	[0.311507]	[0.377804]
Openness												
Trade openness	0.09379	0.018166	0.225604	-0.057282	0.092512	0.015484	0.168156	-0.093168	0.189898	0.097932	0.26246	0.079601
(*lagged*)	[0.167355]	[0.173421]	[0.274024]	[0.477739]	[0.167282]	[0.173474]	[0.279593]	[0.488935]	[0.139192]	[0.171651]	[0.207402]	[0.268441]
Natural resource abundance	0.000060**	0.000065**	0.000017	0.00007	0.000051*	0.000070**	-0.000009	0.000004	0.000023	0.000009	0.000007	-0.000001
(*lagged*)	[0.000030]	[0.000030]	[0.000048]	[0.000057]	[0.000031]	[0.000030]	[0.000050]	[0.000153]	[0.000030]	[0.000049]	[0.000036]	[0.000079]
Net financial inflows	11.724833***	9.076686***	9.146738***	8.790575***	11.242085***	8.854313***	8.903630***	8.242288***	7.515712***	7.987984***	2.620011	4.577180**
(*lagged*)	[1.809798]	[1.737000]	[2.988105]	[3.047220]	[1.779827]	[1.724181]	[2.943198]	[2.982005]	[1.476020]	[1.699251]	[1.954507]	[1.944354]
External shocks												
Terms of trade shocks	-0.798983	-2.424298	5.502171	1.202722	-0.617949	-2.242524	5.245245	2.088624	0.713338	-1.949196	2.685222	3.07598
Dlpx (*lagged*)	[1.863271]	[2.192080]	[3.696024]	[2.891554]	[1.862446]	[2.190841]	[3.824747]	[3.109869]	[1.560524]	[2.415677]	[2.325969]	[2.072661]
World interest rate	2.227106	5.364446	3.343591	-12.002881	1.907471	5.105734	2.323278	-9.933149	5.591029	4.650091	-0.905048	10.573446*
Wir (*lagged*)	[4.606560]	[4.693445]	[10.264146]	[12.310788]	[4.617658]	[4.702236]	[10.281145]	[12.228390]	[4.034766]	[5.031449]	[7.213393]	[6.314621]
Dlpx * Deposit dollarization	2.606771	5.53706	-16.817386	6.043213	1.683128	5.26584	-20.957829	2.555679	-5.604813	4.898241	-20.227667**	-9.737188
(*lagged*)	[5.649015]	[6.217231]	[16.286698]	[10.435750]	[5.621994]	[6.199598]	[16.865806]	[10.473745]	[5.146117]	[6.720975]	[8.435600]	[8.326228]
Wir * Deposit dollarization	3.809006	2.745913	2.409488	13.50189	3.238859	3.594001	-0.863511	8.213759	7.505707	9.75905	14.248259	-11.237052
(*lagged*)	[10.586144]	[10.002008]	[22.338979]	[24.851447]	[10.622236]	[9.918849]	[23.851485]	[25.478596]	[8.430062]	[9.704444]	[14.216027]	[15.711862]
Observations	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234
Countries	66	66	66	66	66	66	66	66	66	66	66	66

*1/ See footnote in Table 6. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Table 13

Determinants of Sudden Stops, Net and By Sources: Does openness mitigates the impact of external shocks?

Dependent variable: Sudden Stop dummy that takes the value of 1 when there is a reversal in the financial account (FA)
Sample of ALL Countries (82 countries), 1975-2007 (annual information)

	Financial account **FA** *0 (as % of HP trend GDP)*				*Financial account* **FA** *1 (as % of HP trend GDP)*				*Financial account* **FA** *2 (as % of HP trend GDP)*			
Variable	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*	*Sudden stop*	*Inflow-driven SS*	*Outflow-driven SS*	*Mixed case SS*
GDP growth	-3.898886**	-3.282330*	-1.963326	-4.874469	-3.214268*	-2.74563	-2.117028	-2.757849	-1.378223	-0.603993	-3.56051	0.699648
(*lagged*)	[1.702961]	[1.807558]	[3.993309]	[3.667262]	[1.718070]	[1.818971]	[4.030370]	[3.565311]	[1.533779]	[1.802046]	[2.668108]	[2.607225]
Macroeconomic framework												
Inflation	-0.632787	-1.04602	-12.614376**	0.545661	-0.651204	-0.954517	-13.835623**	0.501664	0.814737	-0.915156	-0.447983	3.147700***
(*lagged*)	[0.785511]	[0.860684]	[5.734968]	[1.552235]	[0.797840]	[0.859707]	[5.904700]	[1.605313]	[0.672313]	[0.928497]	[1.322726]	[1.005433]
High Inflation	0.593552	1.014176	2.11559	-9.880469	0.615521	0.926766	3.45331	-9.113268	-0.831629	0.898939	0.408455	-12.972914
(*lagged*)	[0.778187]	[0.852833]	[40124.556647]	[38130.386908]	[0.790834]	[0.852363]	[38656.602825]	[17236.441210]	[0.667608]	[0.922669]	[1.312687]	[2.59357e+05]
Exchange rate regime	-0.255271***	-0.267410***	-0.045791	-0.25311	-0.264001***	-0.275741***	-0.075306	-0.246877	-0.178218**	-0.222228**	-0.002854	-0.090967
XRR (*lagged*)	[0.082975]	[0.087624]	[0.197290]	[0.190294]	[0.085178]	[0.088481]	[0.198395]	[0.199448]	[0.077637]	[0.092585]	[0.124466]	[0.135199]
Current account (*% GDP*)	3.856343**	1.219794	11.762260***	3.205347	3.148400*	0.68033	11.939910***	0.697441	1.195514	1.165491	0.61089	-1.219829
(*lagged*)	[1.653035]	[1.729390]	[3.600996]	[3.421328]	[1.693821]	[1.755917]	[3.597366]	[3.591747]	[1.563255]	[1.802046]	[2.395509]	[2.882272]
CG Budget surplus (*% GDP*)	0.015764	0.02619	-0.00763	-0.002713	0.013386	0.02087	0.009172	-0.017369	0.013246	0.006727	0.018148	0.021304
(*lagged*)	[0.017006]	[0.018292]	[0.035265]	[0.037696]	[0.017343]	[0.018491]	[0.034846]	[0.038876]	[0.016270]	[0.019142]	[0.025404]	[0.028021]
Financial sector												
Private credit (*% GDP*)	0.292744	-0.116906	0.611664*	0.130434	0.28037	-0.105457	0.554292*	-0.213498	0.051886	-0.132712	0.109529	0.116804
(*lagged*)	[0.195904]	[0.217996]	[0.326794]	[0.476350]	[0.202419]	[0.222344]	[0.327642]	[0.553905]	[0.196789]	[0.234270]	[0.269631]	[0.356048]
Openness												
Trade openness	0.324829*	0.379287**	0.08521	-0.272409	0.305013*	0.338729*	0.032303	-0.171984	0.296916	0.349104	0.280698	-0.567633
(*lagged*)	[0.177038]	[0.193308]	[0.299224]	[0.557868]	[0.184339]	[0.205225]	[0.300353]	[0.573439]	[0.192405]	[0.219065]	[0.257179]	[0.489329]
Natural resource abundance	0.000070**	0.000072**	0.000033	0.000083	0.000069**	0.000085***	0.000017	0.000019	0.000043	0.000032	0.000032	-0.000017
(*lagged*)	[0.000028]	[0.000029]	[0.000043]	[0.000059]	[0.000029]	[0.000029]	[0.000044]	[0.000134]	[0.000030]	[0.000041]	[0.000036]	[0.000086]
Net financial inflows	9.098374***	7.164927***	9.861616***	10.015104**	8.749632***	7.269677***	9.667450***	7.988223*	7.045959***	6.707789***	2.172348	3.747966
(*lagged*)	[1.978239]	[1.977337]	[3.579888]	[4.428723]	[2.015157]	[2.032804]	[3.540317]	[4.411064]	[1.962000]	[2.100010]	[2.633239]	[3.408993]
External shocks												
Terms of trade shocks	-0.790599	0.872152	3.716663	-7.802926*	-0.929926	0.881282	2.931185	-8.898976*	-1.716981	-6.078054**	-0.472605	4.69129
Dlpx (*lagged*)	[2.573254]	[2.927378]	[6.738119]	[4.653456]	[2.620182]	[2.944225]	[7.042511]	[4.657860]	[2.221610]	[2.708917]	[3.940670]	[3.886491]
World interest rate	4.019319	11.127535	-2.053556	-12.906614	3.755698	11.242031	-4.195255	-11.930653	7.647297	9.648995	5.758564	-12.008166
Wir (*lagged*)	[6.616682]	[7.212158]	[14.514749]	[15.987681]	[6.728673]	[7.334494]	[14.532217]	[16.726934]	[6.252692]	[7.744753]	[9.319467]	[11.668174]
Dlpx * Trade openness	-1.707329	-4.031204	-4.762272	8.92476	-1.229887	-3.799778	-5.053191	12.51103	0.75201	6.215377*	-1.899403	-5.409909
(*lagged*)	[3.757354]	[4.224214]	[8.394236]	[7.508529]	[3.853998]	[4.272096]	[8.762216]	[7.649458]	[3.302075]	[3.769651]	[5.646798]	[6.115139]
Dlpx * Financial openness	12.012626	10.466486	33.475238	31.887941	6.948144	10.75183	35.954636*	13.523994	-5.84981	4.061115	-1.927623	10.11528
(*lagged*)	[18.049577]	[16.657305]	[20.640908]	[28.355017]	[18.712185]	[16.432263]	[21.294878]	[24.828988]	[15.045371]	[14.722395]	[13.416599]	[18.695268]
Wir * Trade openness	-6.963105	-10.654138	2.127108	0.342405	-6.663981	-10.026399	2.511149	-3.485803	-1.478348	-7.440853	-3.026147	25.585059*
(*lagged*)	[6.317417]	[6.817018]	[11.236489]	[19.600315]	[6.447638]	[7.113335]	[11.269579]	[19.883665]	[6.299529]	[7.388259]	[9.384027]	[13.357823]
Wir * Financial openness	127.279798**	89.217819	199.893651*	112.463088	129.270844**	80.208273	218.644197*	149.903632	25.664744	46.135989	-3.984636	86.351905
(*lagged*)	[62.335622]	[67.829384]	[121.395491]	[149.144448]	[63.305920]	[69.304275]	[122.702554]	[155.084020]	[57.553768]	[73.056013]	[81.480598]	[99.793874]
Observations	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Countries	82	82	82	82	82	82	82	82	82	82	82	82

*1/ See footnote in Table 4. Standard errors in brackets. *** (**) [*] denotes significance at the 1 (5) [10] percent level.*

Figure 1
Frequency of Sudden Stop Episodes over time

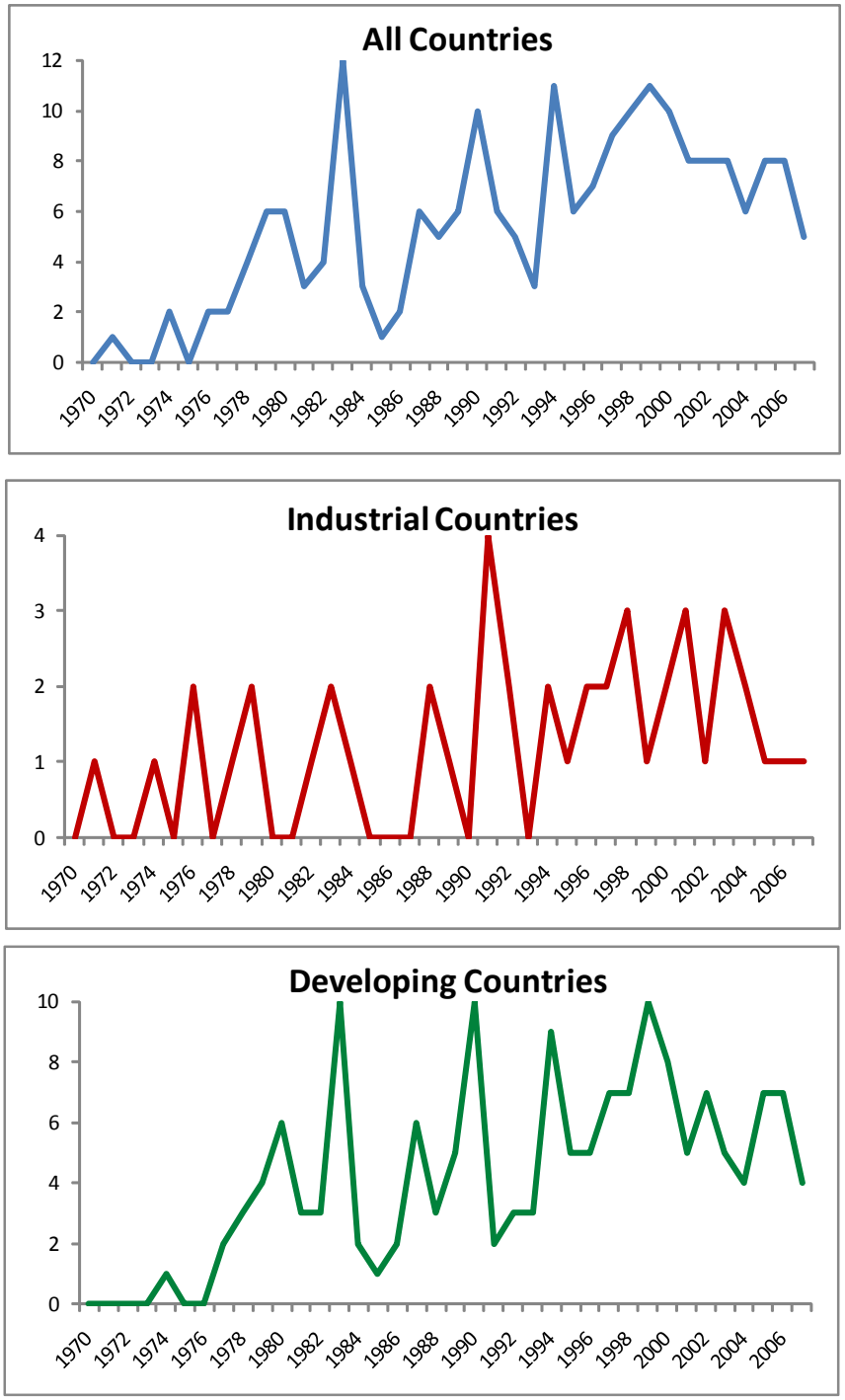


Figure 2
Share of Inflows in Financial Account Reversals

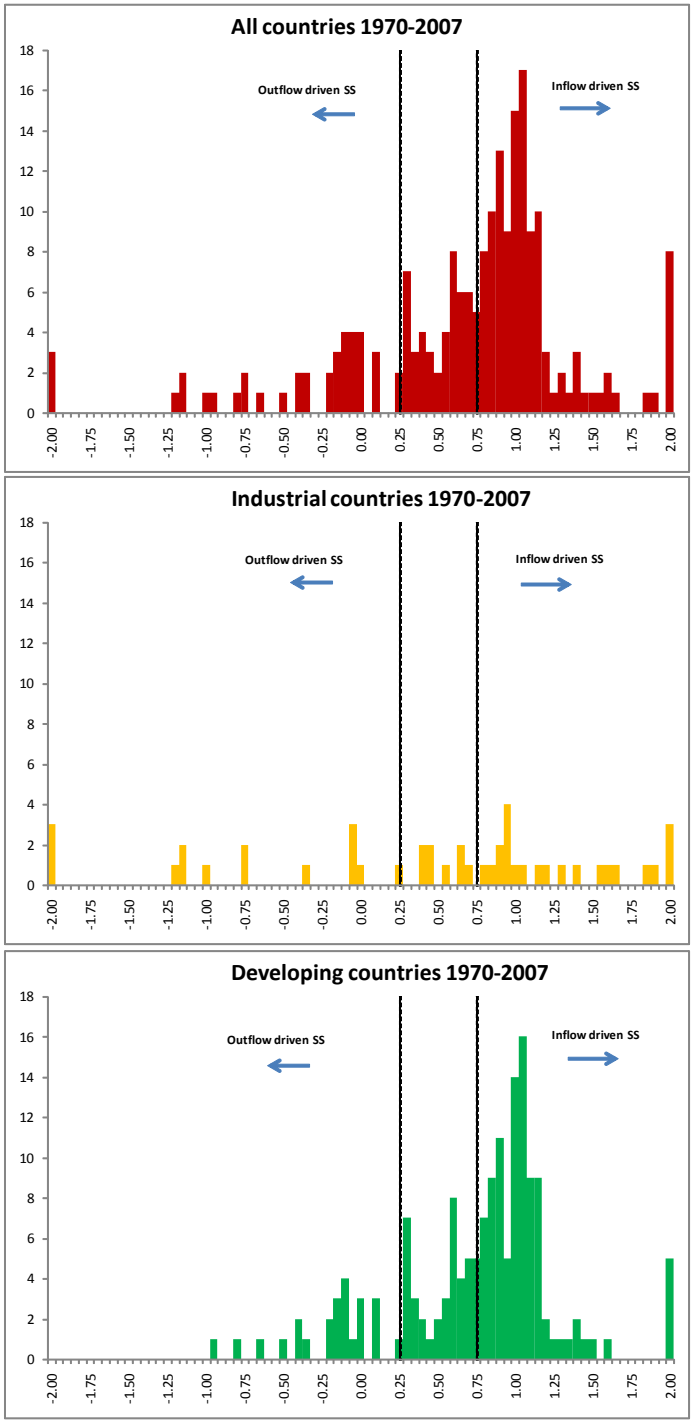


Figure 3
Sources of Financial Account Reversals

All countries, 1970-2007 (annual data)

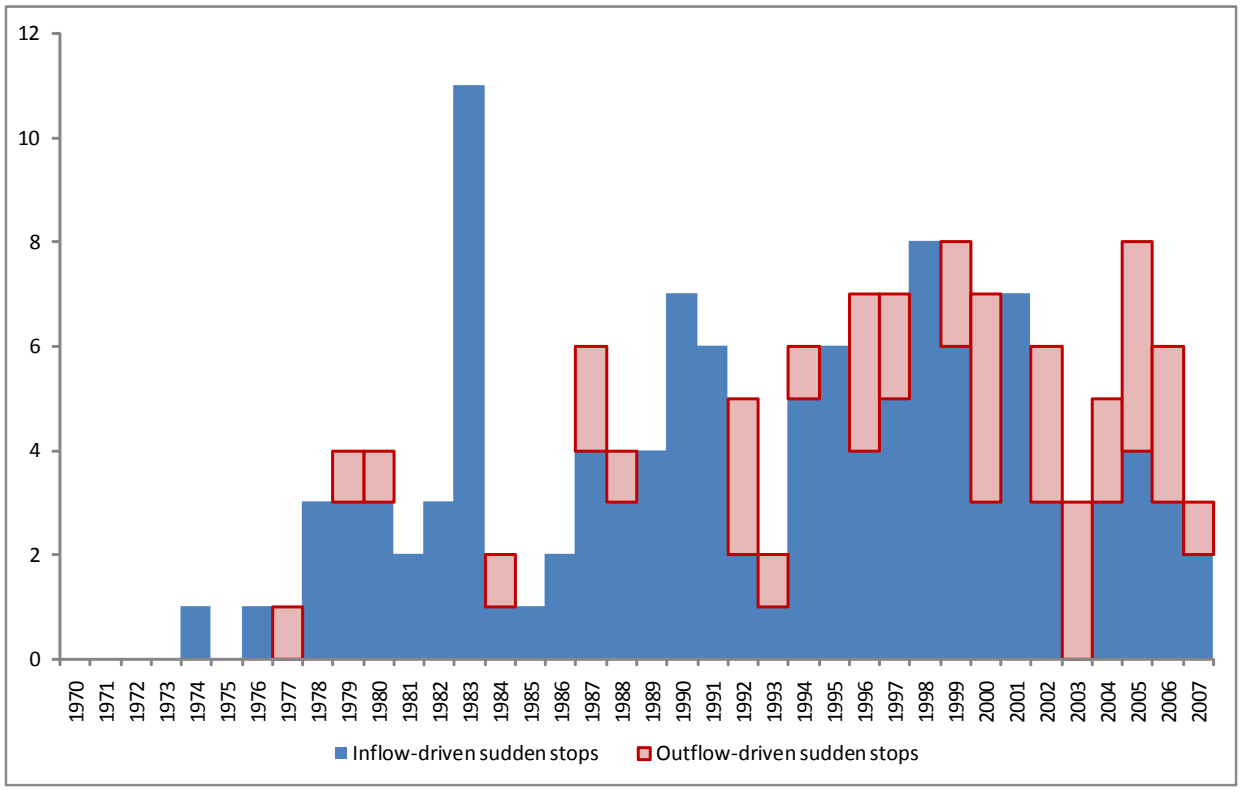
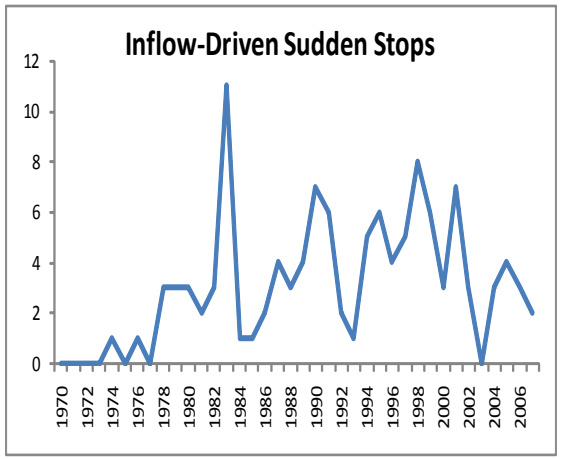
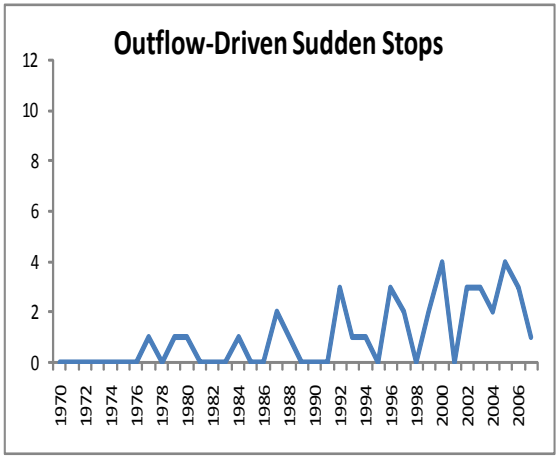


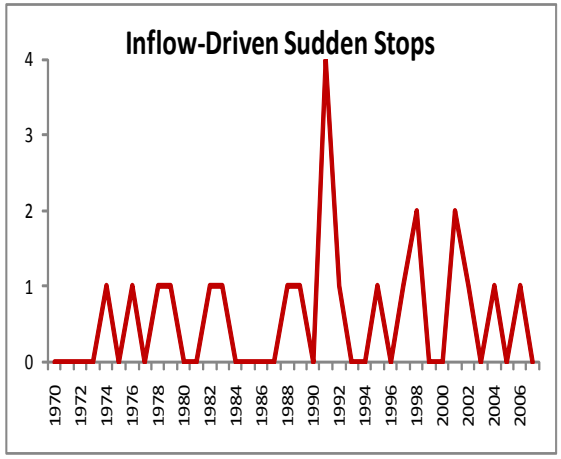
Figure 4
Frequency of Sudden Stop Episodes over time

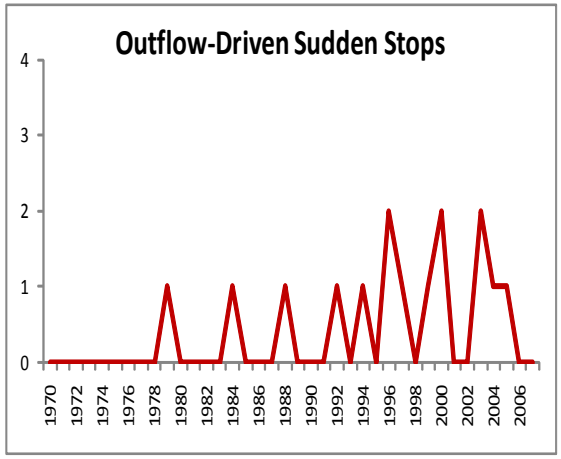
5.1 All Countries



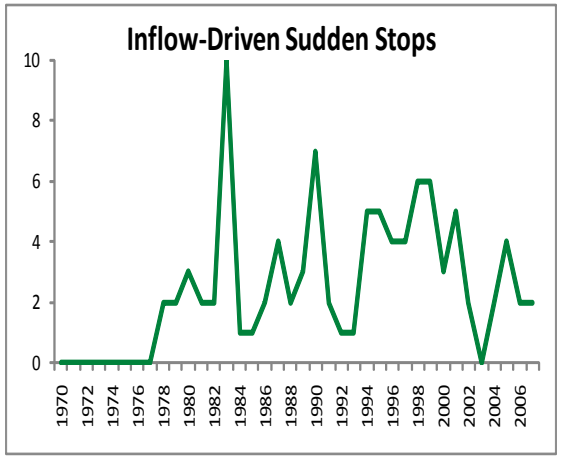


5.2 Industrial Countries





5.3 Developing Countries



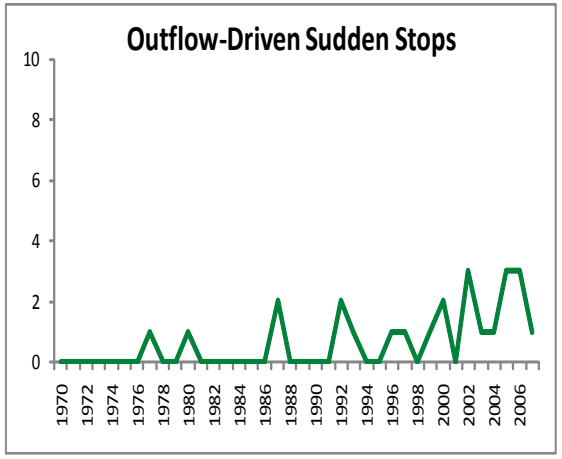
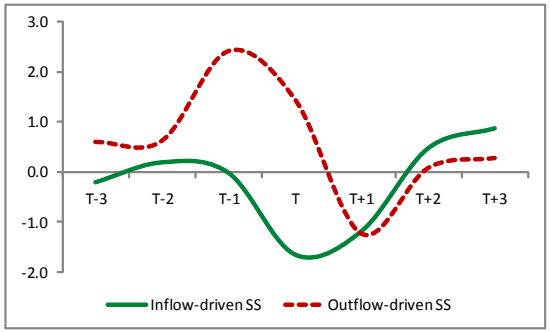


Figure 5

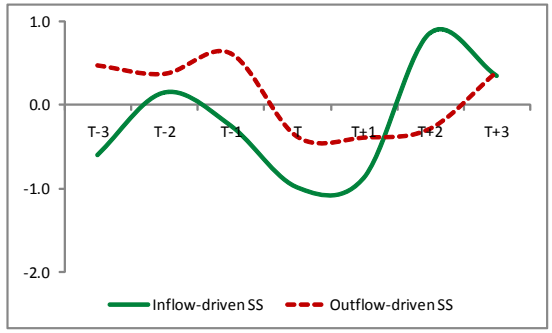
Consequences of sudden stops, by source

Behavior of output per capita, capital per capita and TFP growth

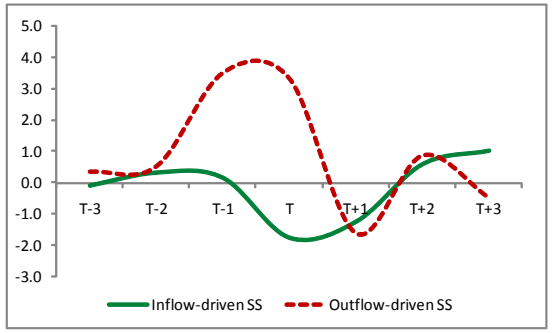
5.1a Real GDP per capita, ALL Countries



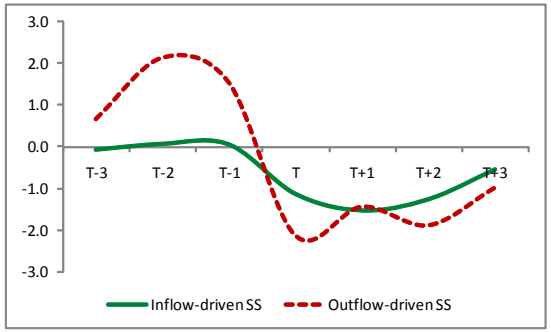
5.1b Real GDP per capita, Industrial Countries



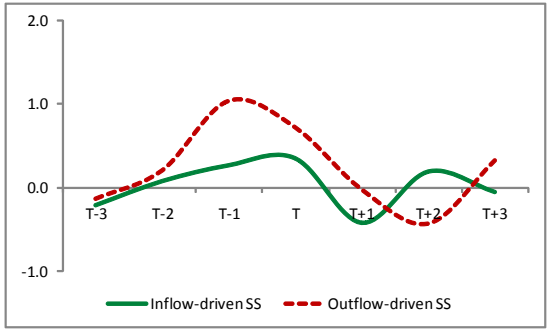
5.1c Real GDP per capita, Developing Countries



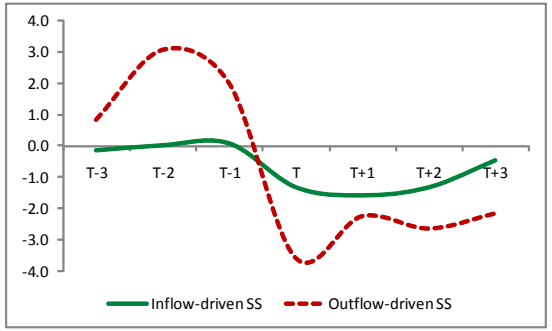
5.2a Capital stock per capita, ALL Countries



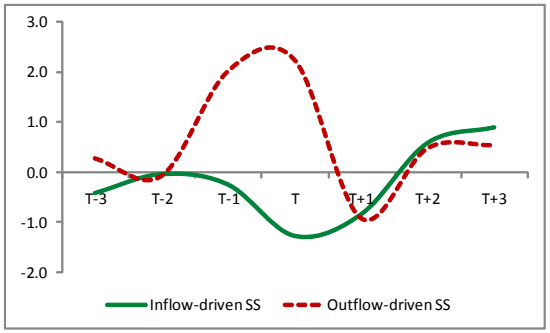
5.2b Capital stock per capita, Industrial Countries



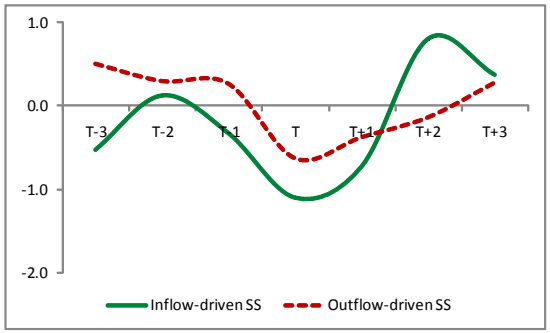
5.2c Capital stock per capita, Developing Countries



5.3a Total factor productivity, ALL Countries



5.3b Total factor productivity, Industrial Countries



5.3c Total factor productivity, Developing Countries

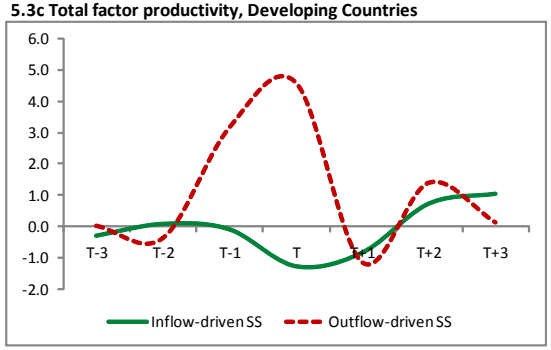


Figure 6
Consequences of sudden stops, by source
Behavior of growth in real GDP, consumption and investment

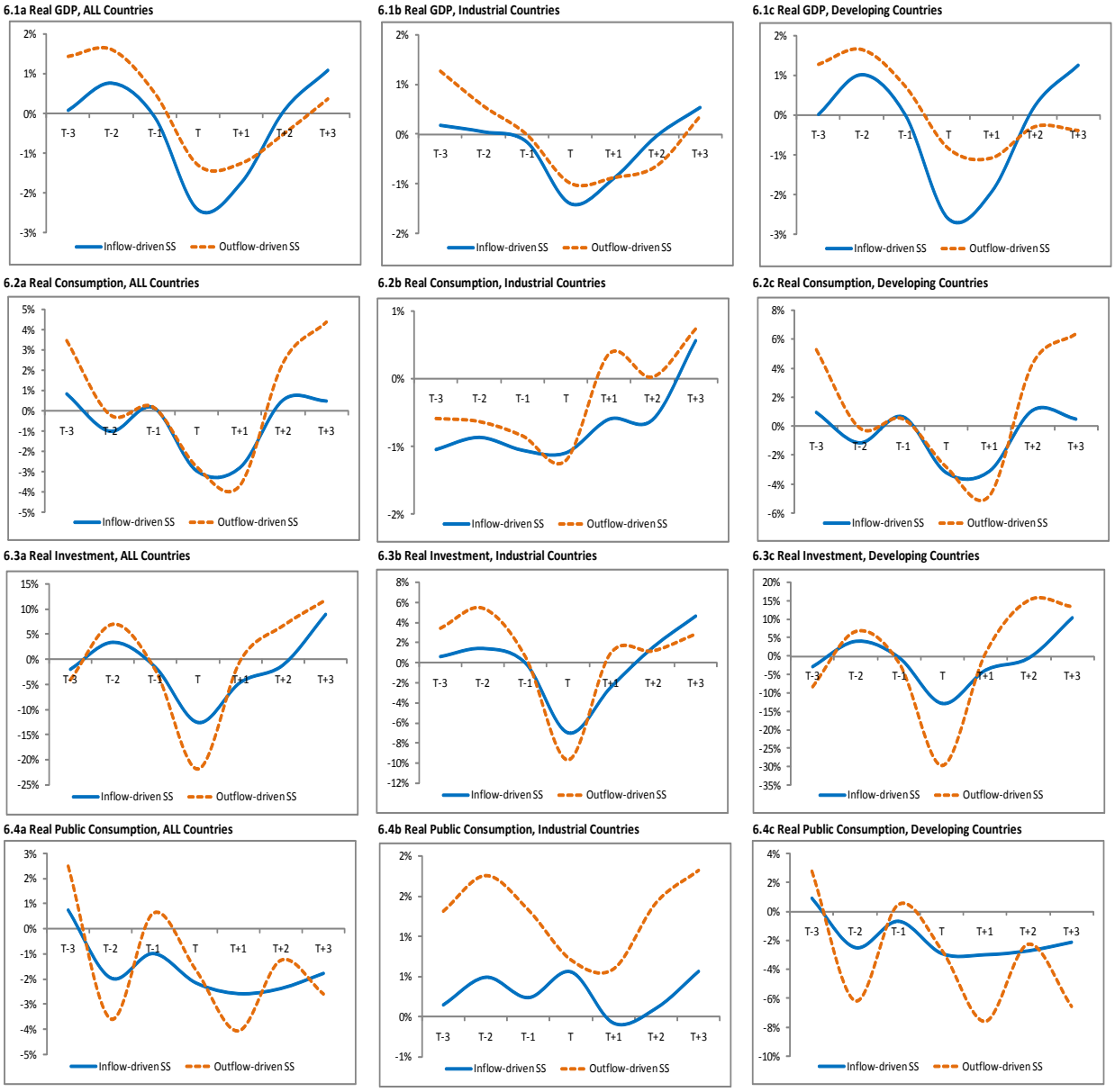
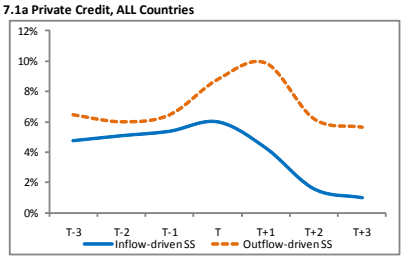
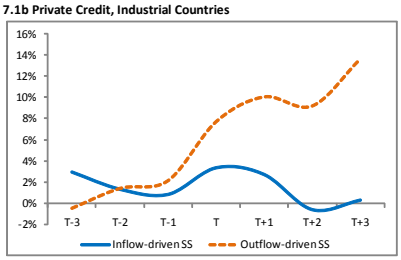


Figure 7
Consequences of sudden stops, by source
Behavior of financial development indicators

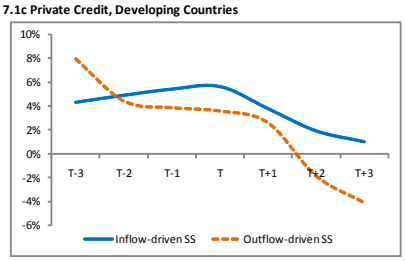
7.1a Private Credit, ALL Countries



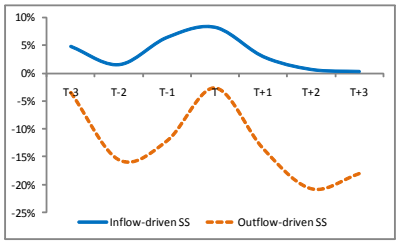
7.1b Private Credit, Industrial Countries



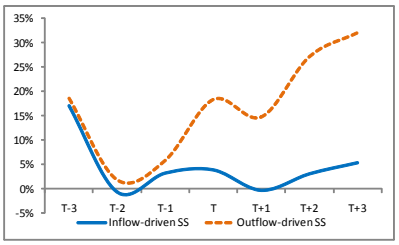
7.1c Private Credit, Developing Countries



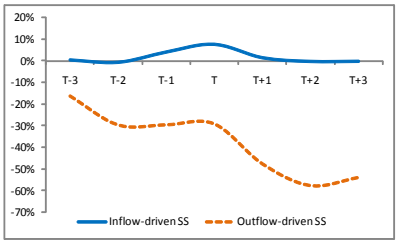
7.2a Leverage, ALL Countries



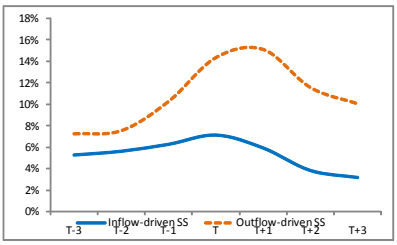
7.2b Leverage, Industrial Countries



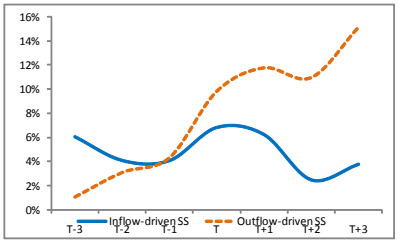
7.2c Leverage, Developing Countries



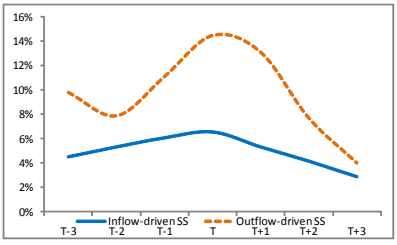
7.3a Bank Assets, ALL Countries



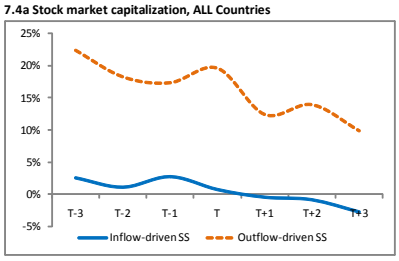
7.3b Bank Assets, Industrial Countries



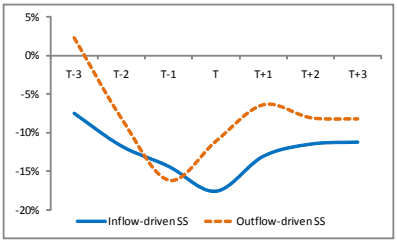
7.3c Bank Assets, Developing Countries



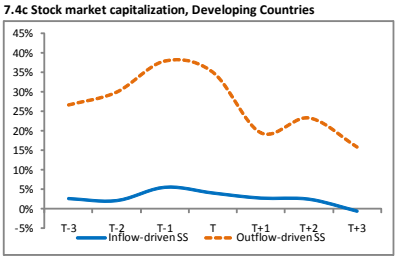
7.4a Stock market capitalization, ALL Countries



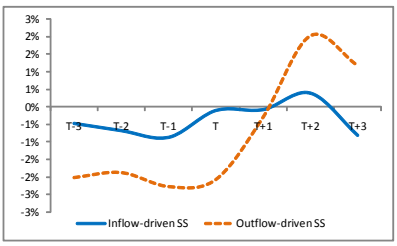
7.4b Stock market capitalization, Industrial Countries



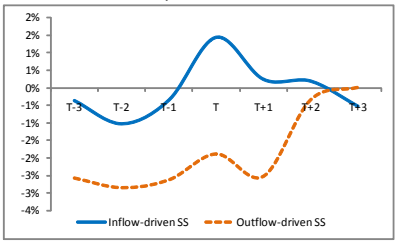
7.4c Stock market capitalization, Developing Countries



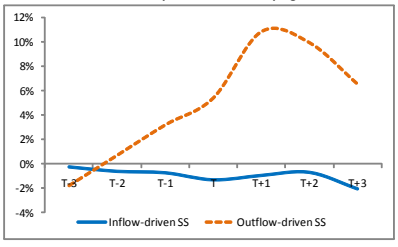
7.5a Private bond market capitalization, ALL Countries



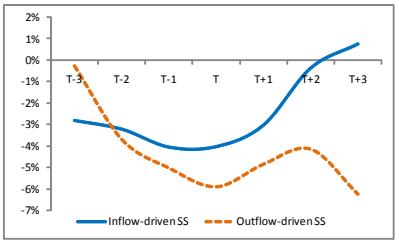
7.5b Private bond market capitalization, Industrial Countries



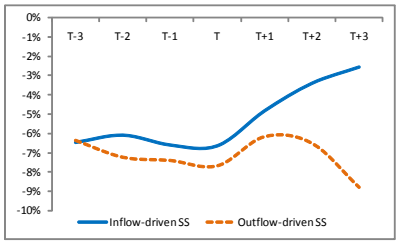
7.5c Private bond market capitalization, Developing Countries



7.6a Public bond market capitalization, ALL Countries



7.6b Public bond market capitalization, Industrial Countries



7.6c Public bond market capitalization, Developing Countries